Rachel Carson: A True Saviour of Birds of Prey

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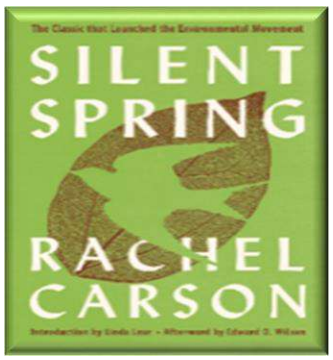
Rachel Louise Carson from Pennsylvania, United States (May 27, 1907 – April 14, 1964) was an eminent marine biologist, environmental conservationist and one of the most renowned author. She professionally related to the U.S. Fish and Wildlife Service as marine biologist for a long time. As an author, she wrote several books starting with the book named '*Under the Sea-Wind: A Naturalist's Picture of Ocean Life'* which was published in 1941. In 1951 she owned National Book Award for the book 'The Sea around Us'. She started her journey in the field research from 1953 on the coast of Atlantic zones, which was described in the book 'The Edge of the Sea'.



The most important journey of her life starts with a letter from her old friend Olga Owens Huckins, who was a journalist and nature lover from Massachusetts. At that time, US Government was trying to get rid of pests and mosquitoes in the residential area of the region and spraying DDT from airplanes. One day, Huckins found several birds and insects lying dead in her two-acre bird sanctuary. After this incident, she wrote two letters conveying her anger – one of her letter was published in The Boston Herald on January 29, 1958 entitled 'Evidence of Havoc by DDT. She wrote another letter to her old friend Rachel Carson describing the whole incident. Carson mentioned in her book that, this letter motivated her to study the impact of synthetic chemical pesticides on natural environment. In 1962 she published a book, **Silent Spring**, describing the adverse effect of chemical pesticides, especially DDT on environment. This book is often referred as the main catalyst of the environmental movement started in the 19th century and which acquired national and international momentum thereafter. Rachel Carson also inspired ecocentric approach of thinking - where human being is not considered as the centre of life but part of the natural ecosystem.

In this book's enthralling opening apologue, she described an imaginary city of the future:

"*It was a spring without voices. On the mornings that had once throbbed with the dawn chorus of robins, catbirds, doves, jays, wrens, and scores of other bird voices there was now no sound; only silence lay over the fields and woods and marsh."*

DDT (Dichlorodiphenyltrichloroethane) is the world's first modern chemical pesticide synthesized in the 1940s. During **World War II**, DDT was effectively used to combat malaria, typhus, and the other insect-borne human diseases. DDT became available for public use in 1945, and it has become most widely used pesticide chemicals in the United States and other parts of the World. Later it is classified as a persistent organic pollutant (POP) and several studies showed that it causes several harmful effect on human being and other living being including neurological effect, toxicity in human and other animals, and biomagnified in higher

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ICT in Daily Life and Thoughts

Dr. Somnath Das

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ABSTRACT

At present, in the age of science, we are all getting used to the fence of advanced technology. Keeping pace with the times is a sign of advanced intelligence for each of us. We have come to love modern technology so much that without it our lifestyle becomes abnormal. From waking up in the morning to sleeping at night, he spends most of his time discovering modern science. Not only does man use advanced technology in his daily life, but he also stands in the world of thinking about advanced technology for his every work. And the advancement of technology is the key to implementing these ideas. Every human being today seeks unimaginable science in his daily life while trying to accomplish all the tasks by applying logic in practical field. In all practical work, if the advanced technology discovered by science is applied through education, then it becomes more convenient and age-appropriate. As a result, the society and the state move forward at a faster pace. Wherever we move forward, the key to life is to invite and embrace this technology in our daily lives and thoughts as we move forward. The way forward would be much stronger if the students of our country could use this technology as a medium of instruction in the right way as compared to the way the students outside India are using advanced technology.

Keywords: *Development of thoughts, Systematic Change, Interesting Perspective, Creation of strategy*

Introduction

At the present time, if he is thinking of improving the management of students' education in a real sense in keeping pace with the times, then above all, improvement is required in information technology. With the help of this technology, students are able to find a lot of unknown information in a very short period of time. Not only this, in the blink of an eye they have become eager to exchange information with each other. Advanced technological advancement is the key to human development, as well as technological advancement. Time goes by on your own, but if you can use that time to move yourself forward through appropriate arrangements, it will be the identity of the most intelligent. And by utilizing this state-of-

CHAPTER 32
TEAM TEACHING

Dr. Somnath Das [1]

Teaching is a lifelong and dynamic process. Individualism Education seeks to play an active role in achieving socialist goals. In a growing and changing society, along with all other subjects, new ideas and new horizons are seen to be revealed in the teaching method, just as one of the notable teaching methods is group teaching.

His collective consciousness is hidden in the naming of group teaching. It is to be hoped that there will be a group consciousness when the matter is for public consideration. A teaching rule becomes effective only when it has the right idea about its goals and objectives. It can also be said that while conducting the teaching work, it is necessary to look carefully so that no obstacles are present. Every teaching has its own specialty. In the same way, we have team learning and specialization and innovation that can take him to a higher level than other teaching. Team teaching is a teaching activity where we see a teacher who specializes in various subjects as his assistant instead of a teacher.

Keywords : *Methods, design, implementation, fields*

Meaning of Group Teaching

Since group education is a group education system, we get a lot of help to manage the teaching work. At the same time the presence of a large number of teachers makes the effectiveness of this teaching more attractive.

Since the level of teaching is a significant aspect of the medium of instruction, the level of teaching and comprehension must also be considered in the construction of team learning - in any case we are arranging this teaching and

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Chapter - 30

Relevance of Yoga in Development of Value Education

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Introduction

Education is a lifelong process. Development of education requires various internal and external developments. Values are what teachers and students pay more attention to in order to achieve inner development. Development of values requires awareness of information and knowledge from various subjects and application of various methods. Today's student is one of the citizens of tomorrow. Therefore, it is very important to awaken the values and welfare of the country. Analyzing the different areas of the discussed era of yoga philosophy, we find that the issue of values is very beautifully highlighted. The subject is presented in such a beautiful and simple manner that simplicity and understanding become natural. Along with physical fitness, controlling the mind, the Vibhuti field of spirituality is beautifully depicted, thereby increasing its acceptance. Apart from this, the fact that we can learn about the identity of the practical values of yoga among the various yoga sadhanas discussed or expanded at present, awakens the issue of our values.

Keywords-

Application, Practical, Functionality, Values

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The Rock Outcrops at Raghunathdi, SE of Ghatsila (Jharkhand, India): a Spectacular Preservation of Polyphase Folding

Srinanda Ganguly, Arpita Samanta, and Abhik Kundu

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The well-known rock outcrop of Paleo-Proterozoic Chaibasa Formation (Table 1) in the Raghunathdi (alias Sushnikalmi) area, 4.4 km to the southeast of Ghatsila town in the East Singbhum District, Jharkhand preserves very complex fold geometry formed due to multiple phases of folding. The outcrop (22°33′40.65″N, 86°30′30.69″E, Fig. 1) is overall trends NE–SW, with ~255 m^2 area. This outcrop, popularly known as the *'Tentuldanga outcrop'*, is extensively studied by structural geologists especially from eastern India (Ghosh & Sengupta, 1990, Sengupta & Ghosh, 1997). This is one of the most favourite outcrop for teachers of structural geology to train their students the styles and manifestations of superposed folding. Therefore, this outcrop has been visited by a very large number of geologists for almost last four decades (or even more). However, except in one field guide on Ghatsila and neighbouring area published by the Department of Geological Sciences, Jadavpur University, India

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Chapter - 7

The Relevance of the Gita in the Development of Modern Educational Values

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Abstract

Education is One life-wide process. Assuredly in the spread of education the circumference is so broad that its movement has been possible in different lights of life. Old religion or gulf and we see that the same thing to be observed in the same matter. Life the prophet value is the bible in the development of spiritual values from the scriptures we are the knowledge can do this the knowledge of the life is also one of the pioneers of our life. This The relevance of values is the place of the basis of the virtue, but it does not change with the variable education system but it becomes more strong. Of with country the state is the matter of values of values far seeing the realization. Action for the help of the banquet that the panic tie to the talent we can get ideal human with the mutual of humanity of this matter also shows great devices in today's education system. The decision is said to be the proper method of knowledge and we can dominate.

Key Words-

Karma, Devotion, Knowledge, Idea, Achieving devotion.

সুখলতা রাও-য়ের "লালু আর ভুলু" : একটি একালীন রূপকথা

সমন্বিতা দাস

মুখপাত

আজকে যে শিশু, কালকে সে পৃথিবীর চালিকাশক্তি। প্রত্যেক শিশুর মধ্যেই লুকিয়ে থাকে আগামী দিনের বীজ। সঠিক দেখভাল, পুষ্টির মাধ্যমে অঙ্কুরিত হয়ে উঠতে পারে সে। শারীরিক বৃদ্ধির পাশে মানসিক বৃদ্ধি, মনের গঠনের জন্য দরকার পড়ে মনের খাবারের, শিশুর মনের বিকাশের জন্য পর্যাপ্ত শিক্ষা, বয়সোপযোগী জ্ঞানের। কিন্তু শুধু জ্ঞানদানই যদি অভিপ্রায় হয় তাহলে তা শিশুর কাছে আকর্ষণীয় হবে কেন? ফলে মনের আনন্দের মাধ্যমে মনের পুষ্টি প্রদানই হলো শিশুদের জন্য সাহিত্য রচনা বা চর্চার মূল কথা। তাই শিশুসাহিত্য লিখতে হলে শিশুদের মনের কাছাকাছি পৌঁছতে হয়। শিশুতোষ ছড়া কাহিনিতে তৎসম শব্দ বর্জিত একদম সহজ সরল প্রাঞ্জল ভাষায় বাক্য গঠন করা বিধেয়। রবীন্দ্রনাথের কথায় বলা যায়—

"সহজ করে বলতে তুমি কহ যে/সহজ কথা যায় না বলা সহজে।"

সময়ের সঙ্গে সঙ্গে শিশু সাহিত্যের গণ্ডিকে আরেকটু বৃদ্ধি করে কিশোরদেরও এ সারিতে নিয়ে আসা হয়েছে।

শিশুসাহিত্যের ইতিহাস ঘাঁটতে গেলে, যে পরিবারকে বাদ রাখলে আলোচনা অসম্পূর্ণ থেকে যায় সেটি হল উপেন্দ্রকিশোর রায়চৌধুরীর পরিবার। উপেন্দ্রকিশোর নিজে এবং পরবর্তীকালে তাঁর সন্তানেরা বিশেষত প্রথম সন্তান সুখলতা ও জ্যেষ্ঠপুত্র সুকুমার এই ধারায় তাঁদের নিজস্ব কৃতির ছাপ রেখে গেছেন।

১৮৮৬ সালে ২৩ অক্টোবর কলকাতার ১৩ নম্বর কর্নওয়ালিস স্ট্রিটের ব্রাহ্মপাড়ায় উপেন্দ্রকিশোর রায়চৌধুরী ও দ্বারকানাথ গঙ্গোপাধ্যায়ের কন্যা বিধুমুখীর প্রথম সন্তান সুখলতার জন্ম হয়। নরেন্দ্র দেব বলেছিলেন 'নামকরণের মধ্যেই উজ্জ্বল হয়ে উঠেছে তাঁর মহান পিতার কল্পনার অভিনব ঐশ্বর্য্য। এ নাম কি এ পর্যন্ত আর দ্বিতীয় কারুর শোনা গেছে?"

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সুখলতার প্রাথমিক শিক্ষা ব্রাহ্মবালিকা শিক্ষালয়ে। পরে তিনি বেথুন কলেজে শিক্ষালাভ করেন। ১৯০৩ খ্রিস্টাব্দে বৃত্তি নিয়ে এফ এ। বি এ পরীক্ষার আগে তাঁর বিবাহ হয়

শ্রীমতী সমন্বিতা দাস, শিক্ষক, আশুতোষ কলেজ, কলকাতা

Description

Application of Ion Exchange Resins in Protein Separation and Purification

Srijita Basumallick

Separation and purification of proteins obtained from natural sources is a really challenging job. This chapter aims to discuss various aspects of separation and purification of proteins by ion exchange chromatographic method. Emphasis has been given on understanding the basic principles and different factors that govern the efficiency and commercial applications of separation of protein obtained by this method.

Keywords

Affinity Chromatography, Immunoaffinity Chromatography, Gel Filtration or Permeation Chromatography, Buffer Solution, Cation and Anion Exchange Chromatography, Donnan Equilibrium

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Part of the book on Ion Exchange Resins

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About the Book

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Cover **Fan Throated Lizard**

Fan throated lizard species complex (genus *Sitana* and *Sarada*) are found in the drier, rocky, shrub lands of southern India. Among them the male lizard have a fancy extension of colourful fan-like structure called dewlap in their throat. They wave the fan to attract females during mating season and also for male-male competition.

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রবীন্দ্র-ভাবনায় ঔপনিবেশিক শিক্ষাব্যবস্থা ও ছাত্রসমাজ

বিক্রম দাস

- যিনি আমাদের শিক্ষক ছিলেন তিনি আমার মোহ বিনাশ করিবার জন্য প্রবল চপেটাঘাতসহ এই সারগর্ভ কথাটি বলিয়াছিলেন, "এখন ইস্কুলে যাবার জন্য যেমন কাঁদিতেছ, না যাবার জন্য ইহার চেয়ে অনেক বেশি কাঁদিতে হইবে।" সেই শিক্ষকের নামধাম আকৃতিপ্রকৃতি আমার কিছুই মনে নাই, কিন্তু সেই গুরুবাক্য ও গুরুতর চপেটাঘাত স্পষ্ট মনে জাগিতেছে। এতবড়ো অব্যর্থ ভবিষ্যদ্বাণী জীবনে আর-কোনোদিন কর্ণগোচর হয় নাই।

  কান্নার জোরে ওরিয়েন্টাল সেমিনারিতে অকালে ভরতি হইলাম। সেখানে কী শিক্ষালাভ করিলাম মনে নাই কিন্তু একটা শাসনপ্রণালীর কথা মনে আছে। পড়া বলিতে না পারিলে ছেলেকে বেঞ্চে দাঁড় করাইয়া তাহার দুই প্রসারিত হাতের উপর ক্লাসের অনেকগুলি স্লেট একত্র করিয়া চাপাইয়া দেওয়া হইত। এরূপে ধারণাশক্তির অভ্যাস বাহির হইতে অন্তরে সঞ্চারিত হইতে পারে কি না তাহা মনস্তত্ত্ববিদদিগের আলোচ্য।[১]

- ওরিয়েন্টাল সেমিনারিতে যখন পড়িতেছিলাম তখন কেবলমাত্র ছাত্র হইয়া থাকিবার যে-হীনতা তাহা মিটাইবার একটা উপায় বাহির করিয়াছিলাম। আমাদের বারান্দার একটি বিশেষ কোণে আমিও একটি ক্লাস খুলিয়াছিলাম। রেলিংগুলা ছিল আমার ছাত্র। একটা কাঠি হাতে করিয়া চৌকি লইয়া তাহাদের সামনে বসিয়া মাস্টারি করিতাম। রেলিংগুলার মধ্যে কে ভালো ছেলে এবং কে মন্দ ছেলে, তাহা একেবারে স্থির করা ছিল। দুষ্ট রেলিংগুলার উপর ক্রমাগত আমার লাঠি পড়িয়া পড়িয়া তাহাদের এমনি দুর্দশা ঘটিয়াছিল যে, প্রাণ থাকিলে তাহারা প্রাণ বিসর্জন করিয়া শান্তি লাভ করিতে পারিত।[২]

'জীবনস্মৃতি' থেকে উদ্ধৃত এই দুইটি অংশ থেকেই পরিষ্কার উপলব্ধি করা যায় রবীন্দ্রনাথ ঠাকুরের ছেলেবেলায় প্রচলিত বিদ্যালয়ের ঔপনিবেশিক শিক্ষাব্যবস্থা এবং সেখানে ছাত্র ও শিক্ষকের ব্যবহারের সমীকরণ অধিকাংশ ক্ষেত্রেই ছাত্র হিসেবে তাঁর শিশুমনে ভীতির ও অশ্রদ্ধার ভাবটিকে ক্রমশই বাড়িয়ে তুলেছিল। তারই ফলস্বরূপ ইংরেজি স্কুলে ভরতি হওয়ার কিছুদিনের মধ্যেই রবীন্দ্রনাথ যে 'ইস্কুল-মাস্টারের শাসন হতে উর্ধশ্বাসে পলাতক', সে কথা বলাই বাহুল্য। নিজের ছাত্রজীবনে শিক্ষাব্যবস্থার এই দুর্বিষহ পীড়নই শিক্ষাপদ্ধতি নিয়ে, ছাত্রসমাজ নিয়ে রবীন্দ্রনাথকে পরবর্তীকালে ভাবতে বাধ্য করেছিল। দেশের শিক্ষাব্যবস্থা ও তার সঙ্গে অঙ্গাঙ্গীভাবে জড়িত ছাত্রসমাজ প্রসঙ্গে রবীন্দ্রনাথের চিন্তা-ভাবনা আজও

কবি নীরেন্দ্রনাথ চক্রবর্তীর কবিতা 'দেশ দেখাচ্ছ অন্ধকারে' : একটি বিশ্লেষণী পাঠ

বিক্রম দাস

[কলিকাতা বিশ্ববিদ্যালয়ের পিএইচ.ডি গবেষক এবং আশুতোষ কলেজের শিক্ষক]

রবীন্দ্র-পরবর্তী বাংলা কবিতায় সংগ্রাম-মুখরিত সেই দিনগুলিতে 'নীল নির্জনের পথে' যাত্রা শুরু করেও যে কবি বাঙালি পাঠককে শুনিয়েছিলেন 'কবিতার বদলে কবিতা' কিংবা 'পাগলা ঘন্টি'র তুমুল তোলপাড়, যাঁর কবিতায় পাঠক বিস্ময়-বিস্ফারিত চোখে প্রথমবার দেখেছিল শহরের রাস্তায় 'টালমাটাল' পায়ে হেঁটে চলা 'কলকাতার যিশু'কে অথবা 'উলঙ্গ রাজা'র সেই প্রতিবাদ-স্পর্ধিত শিশুটিকে— তিনি এই সময়ের বাংলা কবিতার অন্যতম পথিকৃৎ কবি-ব্যক্তিত্ব নীরেন্দ্রনাথ চক্রবর্তী। তাঁর অন্যান্য অনেক কবিতার মতোই উল্লেখনীয় ও বহুপঠিত একটি কবিতা হল— 'দেশ দেখাচ্ছ অন্ধকারে'। এই কবিতাটি কবির বিশিষ্ট কাব্যগ্রন্থ 'কলকাতার যিশু'র (ডিসেম্বর, ১৯৬৯ খ্রি.) ষষ্ঠ কবিতা। ১৯৬৯-এ প্রকাশিত 'কলকাতার যিশু'র পূর্বেই কবি পেরিয়ে এসেছেন চারের দশকের সংগ্রাম-মুখর দিনগুলিকে, দেখেছেন স্বাধীনতা-পরবর্তী পাঁচের দশকের উত্তাল অস্থিরতাকে— স্বপ্নভঙ্গের হতাশাকে, ছয়ের দশকের প্রত্যাশাপূরণের জন্য নিরন্তর আন্দোলনের বিক্ষুব্ধতাকে ছুঁয়ে এসেছেন তাঁর কাব্যপরিক্রমায়। চারের দশকের কবি হলেও তাঁর প্রথম কাব্যগ্রন্থ 'নীল নির্জন' প্রকাশিত হয় ১৯৫৪ সালে। তারপর থেকে একে-একে প্রকাশিত হয়েছে তাঁর 'অন্ধকার বারান্দা' (১৯৬১ খ্রি.), 'প্রথম নায়ক' (১৯৬১ খ্রি.), 'নীরক্ত করবী' (১৯৬৫ খ্রি.), 'নক্ষত্র জয়ের জন্য' (১৯৬৯ খ্রি.) ইত্যাদি। তারপর প্রকাশিত হল 'কলকাতার যিশু', ওই ১৯৬৯ সালেই। নিঃসন্দেহে এই কাব্যগ্রন্থটি বাংলা কবিতায় এক প্রধান দিকচিহ্নস্বরূপ। এরপরেও নীরেন্দ্রনাথ চক্রবর্তী নিরন্তর কবিতা লিখেছেন— প্রকাশিত হয়েছে তাঁর 'শ্রেষ্ঠ কবিতা', 'কাব্যসমগ্র (৬খণ্ড)', 'নির্বাচিত প্রেমের কবিতা'। প্রায় তিরিশটি কাব্যগ্রন্থে বিধৃত রয়েছে তাঁর কবি-পরিচয়। পূর্বোল্লিখিত কাব্যগ্রন্থগুলি ছাড়াও নীরেন্দ্রনাথ চক্রবর্তীর

পূর্ণেন্দু পত্রী

কবিতা সমগ্র

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Cultural Ecosystem Service of Indian Sundarbans: Connecting Conservation,TtraditionalPpractices, Local History in the Backdrop of Socio-religious Harmony

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Abstract

The socio-religious ecosystem is an intangible component of biodiversity, functioning in coherence with human societies associated with it. Man and Biosphere, UNESCO's Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), aims to establish a scientific basis for improving relationships between people and their environments. Since then, ethnic human societies living in high diversity regions are considered an integral part of a holistic conservation programme. The Indian Sundarban enlisted as a UNESCO World Heritage site, the world's largest riverine delta, home to Royal Bengal Tiger and diverse mangrove flora. The land, since human advent, fear of untamable natural fury and affinity for harmonious living, given birth to local deities and folkloristic practices. Uncertainties of climate and livelihood had motivated inhabitants to have faith in nature and its natural resources. This creates a humane ecosystem that values sustainable living the most. In this discussion, we have appreciated the cohesive forces operating on the Indian Sundarbans and accessed the major reasons of decline in the cultural ecosystem services and pointed out the possible ways of restoring it.

Keywords*:* Socio-religious ecosystem, cultural ecosystem service, Indian Sundarban, UNESCO World Heritage site, conservation

Introduction

The conceptual framework of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) has laid some operating principles among them recognizing and respecting the contribution of indigenous and local knowledge (ILK) to the conservation and sustainable use of biodiversity and ecosystems is considered as highly valuable but less discussed component. The environment and culture tie result from intricate interactions between human populations and their immediate physical

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Determination of Erosion and Accretion Area of Lower Balasan River, Darjeeling District, West Bengal

Subham Roy[1] and Subhadip Gupta[2]

Abstract

Shifting of the channel is a natural phenomenon that occurs under the riverine environment. It bears the evidence of an active channel. The Balasan River originates from the Ghoom Simana range and comes down at the Darjeeling terai piedmont surface and continue its flow in the downstream direction to meet finally its principal stream, the Mahananda River near the Siliguri area. The objective of the present paper is to find the magnitude of riverbank erosion of the Balasan channel from Panighata to Kalam jote. The effort is given to measure the area under erosion, accretion as well as unchanged area along the Balasan channel by observing the occurrence of channel shifting in the platform of Geomatics. The path of the Balasan River is extracted from LANDSAT TM and OLI images through Normalised Difference Water Index (NDWI) by using bands 3 and 5. The extracted previous and post-channel path (s) are overlayed for the years 2010,

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পৃথিবীর আছে যেমন তিনটি অয়ন – আকাশমার্গীয় কক্ষপথ বিভিন্ন ঋতুকে, তেমনি আছে তিনটি মেরুবৃত্ত। এই বিভিন্ন অক্ষাংশ মেরুবৃত্তীয় (Polar), নাতিশীতোষ্ণ, ক্রান্তীয়বৃত্তীয়। আজ এই তৃতীয়টি নিয়ন্ত্রিত হচ্ছে জলবায়ু পরিবর্তনের প্রভাবে। যেমন কে করে তুলেছে বিশ্বের Global Climate Risk Index ২০২১ অনুযায়ী জলবায়ু পরিবর্তনের ফলে যে দেশগুলি সবচেয়ে বেশি ক্ষতিগ্রস্ত হতে পারে, তার মধ্যে ভারতের স্থান পঞ্চম। জলবায়ু পরিবর্তনের অভিঘাত দেশের সামগ্রিক অর্থ সামাজিক অবস্থাকেই ক্ষতির মুখে নিয়ে যাবে।

১৯৯৭ সালের কিয়োটো প্রোটোকল জলবায়ু পরিবর্তনের মূল কারণ গ্রীন হাউস গ্যাসগুলির নির্গমন হ্রাসে মূলের অভিঘাত পরিণতি হ্রাস পেয়। সময়ের সেকেই বিভিন্ন দেশের উপর আন্তর্জাতিক চাপ বাড়তে থাকে এবং ফলস্বরূপ অন্যান্য দেশের মত ভারতবর্ষ ও কোটীয় প্রয়োগের ও ছবীয় ভাবে জলবায়ু পরিবর্তনের বিরুদ্ধে বিভিন্ন নীতি নির্ধারণ শুরু করে।

দুই কম সংযোজক দেশের মধ্যে আরও অন্তর্ভুক্ত, যেখানে ২০০১ সালে এমনটি ভাবনাচেতনায় অধীর পাশ হয়। এই অধীর অনুযায়ী আন্তর্জাতিক গ্রুপনিয়ে ভাবনার বৃদ্ধি কল্প অক্ষিণ ও বাস্তবায়ন এবারই কথাচেতনেশন বিশিষ্ট কেন্দ্র। তবু ইতালি বিশ্বাসের টাপর ভোরে দেওয়া যাচ্ছে।

United Nations Framework Convention on Climate Change (UNFCCC) এর প্রাসঙ্গে সম্মেলনে ভারত যোগদান করে পঞ্চমবার বৈঠক ২০১২ সালের পঞ্চম অধ্যায় কেন্দ্রীয় ঘটনাগুলি Nationally Determined Contribution পালন করে। যার মূল বক্তব্য UNFCCC এর পার্টির দুটি অনুযায়ী ২০৭০ সালের মধ্যে ভারতকে গ্রীন হাউস গ্যাসগুলির নির্গমন মাত্রা পুনরা নিয়ে আসতে হবে।

জলবায়ু পরিবর্তনের প্রধান মাধ্যমের লক্ষ্য:

প্রস্তাবিত লক্ষ্য:

১) ২০৩০ সালের মধ্যে নির্গমন মাত্রা GDP এর ৩৩ শতাংশ হ্রাস করতে হবে(২০০৫ সালের তুলনায়)।

২) ২০৩০ সালের মধ্যে মোট শক্তি ব্যবহারের ৪০ শতাংশ অতীতাশ্ব জ্বালানি থেকে উৎপন্ন করতে পারার মত প্রযুক্তিগত উন্নয়ন ঘটাতে হবে।

৩) ২০৩০ সালের মধ্যে ২.৫ – ৩ বিলিয়ন টন কার্বন ডাই অক্সাইড শোষণের ক্ষমতা অতিরিক্ত কার্বন সিঙ্ক তৈরি করতে হবে বৃক্ষরোপণের মাধ্যমে।

পরোক্ষ লক্ষ্য:

১) জলবায়ু বান্ধব পদ্ধতি অবলম্বন করে অর্থনৈতিক উন্নতি সাধন।

২) জলবায়ু পরিবর্তনের ফলে যে সব ক্ষেত্রে বিপদ হতে পারে যেমন বৃষ্টি, হোয়াংপাল, টাপসুনামারী বা পার্বত্য অঞ্চল, সেই সব ক্ষেত্রের সার্বিক উন্নতির উদ্দেশ্যে উপযুক্ত পরিকল্পনা।

৩) পরিবেশ সংরক্ষণ ও সামাজিক প্রতিষ্ঠা বজায় রেখে কাজকর্ম ও ইন্ডিস্ট্রীল প্রতিষ্ঠানগুলির অবাধ গতির এবং জলবায়ু পরিবর্তনের বিরুদ্ধে Lifestyle for Environment ধারক ও বাহকদের কে এগিয়ে নিয়ে যাওয়া।

হরপ্পাসভ্যতা দেখা যেছে ৯০৯০ সালের আগে গ্রীন হাউস গ্যাসগুলির নির্গমনের বিশ্বে তৃতীয় স্থান অধিকার করেছে। এমনে চলতে থাকলে ২০৪০ এর সালের আগেই আমাদের শক্তি ব্যবহারের ক্ষেত্রে অধিক সংবেদী, বাজেয়াতির ও দুরন্তপী পাদক্ষেপ নিতে হবে। কারণের ব্যবহার কমিয়ে অতিরিক্তির শক্তিকে অধিক বেশি ব্যবহার করতে হবে। দেশের সরকার ও স্থানীয় সমাজ যে এদিকে অগ্রসর হবে আরও সম্পদের সংরক্ষণ ও প্রসারের জন্য। জলবায়ু পরিবর্তনের দুরুত্বোপযোগী পলিসাকে অগ্রাধিকার দিয়ে দেশের আর্থ সামাজিক তথা স্বাস্থ্যের নীতি প্রণয়ন ও প্রয়োগ করতে হবে। এজন্যে ছাত্রীয় সমাজ থেকে আন্তর্জাতিক ক্ষেত্র প্রত্যেকেই যদি সচেতনতার মান বাড়িয়ে দেয় তবেই জলবায়ু পরিবর্তনের বিরুদ্ধে যুদ্ধজয় সম্ভব। পৃথিবীকে শিল্পের হাতেপাত্র করে দেওয়ার প্রথা বজায়রাখের জন্যে ক্ষতির মুখ অর্থনীতির সবেই সম্ভব হবে।

Saga of Empowered Women: A Case Study on the Bengali Prime Time Soap Operas

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Television in India

Television has grown over time into one of the most powerful mass media, controlling viewers' personal space, discussion subjects, and, most crucially, the substance of their cognitive processes. Television not only influences and affects our cognitive processes, but it also has a big impact on our perception. What individuals should think about is determined by the impact of the media on society. Television enabled one-way communication between senders (producers) and receivers (viewers) in the pre-digital period, with no feedback mechanism. Television enables viewers to take a passive part in this fashion. However, through digital feedback mechanisms, the digital era has established immediate, two-way contact between television program providers and viewers, activating the role of viewers in understanding and critically assessing polysemic media texts. People's viewing habits and the meaning they derive from television might differ.

Media convergence has significantly transformed the Indian television audience's soap opera viewing experience by offering digital exposure to diversified content. Television plays a pivotal role in shaping and building the opinions, views, and attitudes of the audience. From the coyness of the '60s to the glamourization of the '90s to the women empowerment in the new millennium there has been a reshaping of paradigms in the portrayal of women characters in television soap operas. Women empowerment is essential to showcase her at her fullest potential and capabilities and to shape a better society with the media playing a critical role in responding to this process. Here, the researchers applied a case study method to analyse the content and genre of the selected soap operas of Bengali channels to understand the portrayal of women.

Defining Empowerment

Women empowerment means promoting the women with all their rights like a man in the family, society, school, college, and country. It helps them to make independent and individual decisions for their personal growth and development, Due the patriarchal mindset ingrained deeply in the beliefs

Fluvial Systems in the Anthropocene pp 125–134 | Cite as

An Integrated Assessment of Flood Risk Using Geospatial and Multi-Criteria Based Analysis: A Case Study from Mayurakshi River Basin, India

Arnirban Kundu, Sayani Mukhopadhyay ✉ & Sumit Panja

Chapter | First Online: 05 November 2022

Abstract

Flood is considered to be one of the most important and common hydro-meteorological events and cause damage to the social system. A heuristic framework to assess the distributive pattern of flood risk is, therefore, an essential need for policymakers. This study aims to delineate the spatial distribution of flood risk in the Mayurakshi River Basin (MRB) region using an inclusive methodological foundation of comprehending geospatial and multi-criteria techniques. Spatial distribution of 10 natural and 8 socio-economic factors contributing to flood in the MRB region have been attained to delineate the Flood Susceptibility Index (FSI) and Flood Vulnerability Index (FVI) of the MRB region using Remote Sensing (RS), Geographic Information System (GIS) and multi-criteria based Analytical Hierarchy Process (AHP). Finally, after successful inculcation of FSI and FVI, a Flood Risk Index (FRI) has been adopted to represent the spatial distinction of the intensity of flood risk in the MRB region. Results show that the lower basin region of MRB has comperatively higher FSI and FVI which in turn resulted in a higher degree of FRI concerning the middle and higher basins. The West Bengal part of MRB has 48.74% of the area consisting of very high—high flood risk compared to the 1.94% area of the Jharkhand part. This study thus tries to introduce a holistic methodological framework in the comprehensive apprehension of flood risk and after synthesizing all the results, it calls for some area-specific policy intervention for flood management in a more sustainable and radical manner.

Keywords

Flood Risk | Mayurakshi River Basin | Flood susceptibility | Flood vulnerability | AHP

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COMPARATIVE

GOVERNMENT AND POLITICS

THEORY AND CONCEPTS

DEBARSHI KHAMRUI

Effect of Covid 19 Outbreak on Hospitality Sector Stock Prices of top two Asian Tourist Destination Countries: A Beta Stationarity Methodology

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[2][illegible] Technology Solutions, Kolkata, West Bengal, India

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ABSTRACT

The COVID-19 pandemic has brought about a [illegible] of catastrophes to all aspects of life and has [illegible] social, political, economic, religious, academic, and all other activities. The hospitality sector is one of the worst affected. This [illegible] study investigates whether the COVID-19 outbreak has significantly changed the hospitality stock index [illegible] of the top two Asian tourist destinations. Outcome reveals that the COVID-19 outbreak has adversely affected the hospitality sector's stock volatility. However, while two countries displayed a significant increase in [illegible], [illegible] remained stationary [illegible] of Turkey was stationary. Also, a [illegible] trend in beta was [illegible] for four of five countries. Finally, the study further brings out that [illegible] points of time for different countries. This study [illegible] into the nature of stationarity of beta of hospitality industry securities and also reveals the [illegible] additional impact on the hospitality industry stocks because of the COVID-19 outbreak, if any.

Keywords: Covid-19; Hospitality; Volatility; Beta; Stationarity

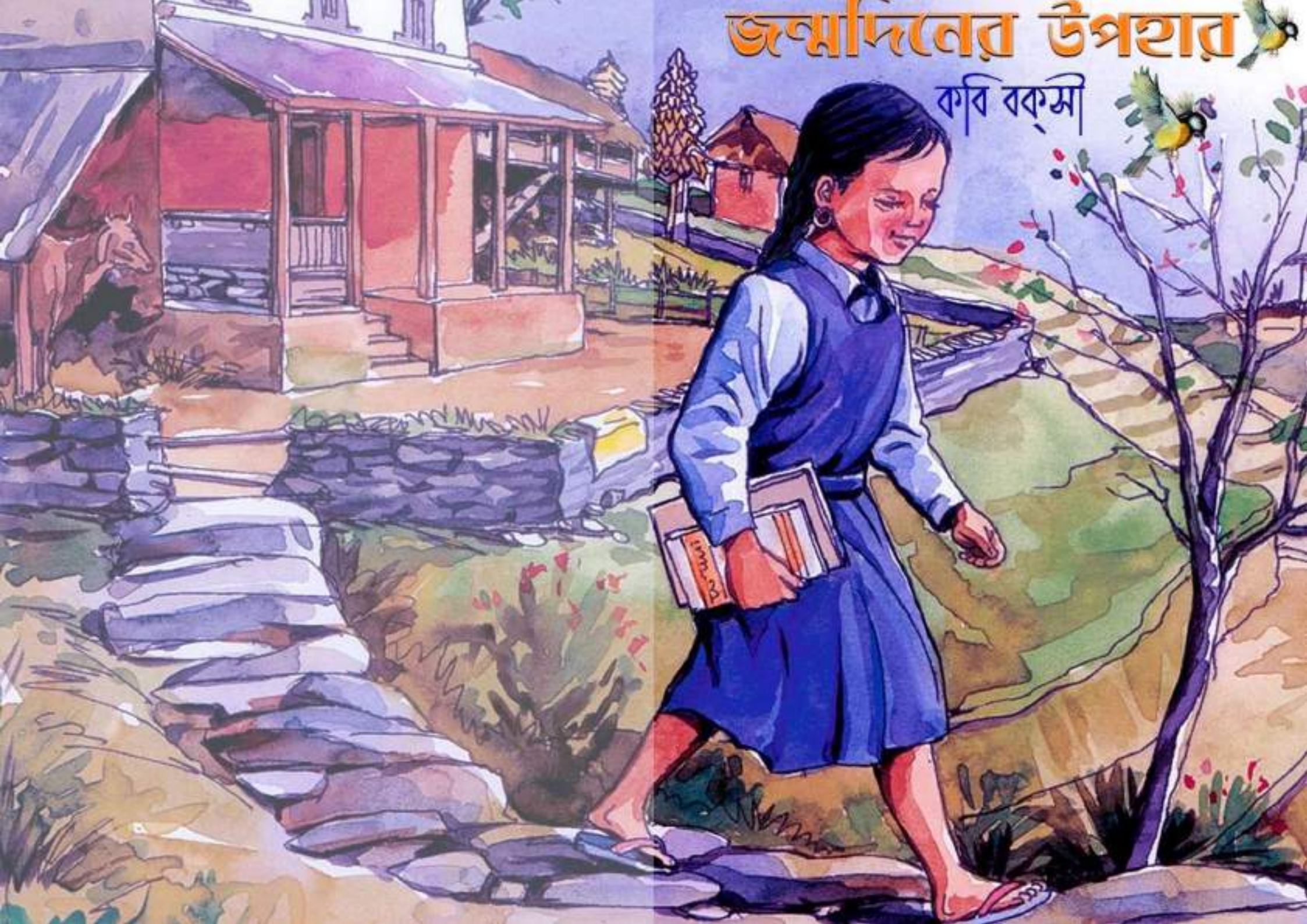
INTRODUCTION

Humanity is facing an unprecedented health crisis. The COVID-19 pandemic, also known as the coronavirus pandemic, has staggered like the economy, employment, [illegible], and society like never before.

As tumbling stock markets indicate growing fears about the potential economic impact of the coronavirus, the IGM Forum at Chicago Booth invited [illegible] of leading economists in the US and Europe, which concluded that of all the industries, the hospitality industry is and will continue to remain the hardest hit (UNWTO, 2020). Amongst the initial steps for preventing the spread of viruses, apart from basic hygiene measures of sanitation and social distancing, another crucial step most countries have taken is a ban or restrictions on travel, both international and domestic.

As for research work on the hospitality, tourism, travel, and leisure industries, much work has already been done on the current state of affairs of these industries and the impact that they are facing due to lockdowns and restrictions (Hoque et al., 2020; Zhang, [illegible], 2020; [illegible] et al., 2020a; [illegible], 2020).

However, we could not find any work on the impact of COVID-19 on the stocks of the hospitality, tourism, travel, and leisure industries. Although the common belief is that due to the sudden slowdown/lockdown of the activities of the hospitality, tourism, travel, and leisure industries, their stocks are also witnessing a sharp decline in prices, there is no research to support this view. There is an urgent necessity for research to examine the impact of this pandemic and its [illegible] on the financial performance of hospitality, tourism, travel, and leisure industry stocks. The magnitude of the known adverse impact on hospitality-related industries needs to be [illegible] and quantified [illegible]


জন্মদিনের উপহার
কবি বক্সী

Struggling with Plastic: A Hidden Story of Hill

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Lepchajagat is a small forest village with around 120 population in Darjeeling district nearly 15 km away from Darjeeling main township, West Bengal, India. Literally, Lepchajagat means the world of Lepcha locally called Lepcha Bustee. Picturesque view of the mysterious evergreen pine forest enhances the beauty of this place. Hill with pine forest makes this place more attractive for tourism.

People living here in a small circle with a small neighbourhood. They believe in simple living since a long-time back. Surrounded by forests, tea gardens being more closed to nature, they are very simple in nature, kind-hearted, helpful, and down to earth. A dweller explains "We were born seeing the forests clean and healthy, the place where we built our first camps, start our hide, and seek journey. The most famous one "wano" the game where we took hides in different trees as we had less option of playground here and these forests carried our entire childhood".

Time changes many things. According to dwellers of Lepchajagat as time is passing, people here notice the ecosystem of these forests are no longer the same. Problems are immense, in fact its rising day by day. The ground is turning into mass, littered and the sad part is that plastics are seen in many places in different forms, layers after layers. The streams are turning into dump yards, the forest have become a perfect vegetation for plastic wastes. The ground becoming dry, and plants die, many species of butterflies have already been vanished, many of the birds are not seen these days. People used to enjoy the forest walk as it was healthy and the forest was green and rich in diversity. Now, people hesitate because many of the trails are submerged by waste, the smell of forest is covered by the smell of the waste produced by "the most intelligent creatures of God".

One of them regrets "travellers who came from the cities less aware of it because cities have municipalities to handle this part. They may think if they litter it will be cleared up anyhow, but the actual scenario is not like that."

With all these struggles, people in Lepchajagat takes an initiative by themselves. Since before the covid era they have started the waste management programme by their own. They collect Rs.100 to buy gloves and essential items for cleaning from each household or homestay. Even from this year they have made it a routine task, where every Saturday at least one member from each household or homestay take part of this either to clean or burn the solid waste part.

The worst part is that we love nature, we love to spend times in hills, but sometimes we forget to

eBook Information

Materials Research
Solid State Physics and Engineering

Superconductors

Materials and Applications

Eds. Inamuddin, Tariq Altalhi, Vikas Gupta, Mohammad Luqman

Monograph / PDF eBook DRM Free

The book presents the current status of superconductor science and technology.

Keyword: Superconductors, Large-Scale Applications, Bulk Superconductors, Soft Superconductors, Oxide Superconductors, Lanthanide-based Superconductors, High Temperature Superconductors, Superconducting Metamaterials, Medical Applications, Magnetic Imaging Resonance Applications

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Direct URL: https://www.mrforum.com/product/superconductors-materials-and-applications
266 pages, PDF eBook DRM Free, USD 125.00
Materials Research Foundations Vol. 132 / **BISAC:** TEC021000 / **BIC/Thema:** TGM
Imprint: Materials Research Forum LLC, *Publisher's sales rights are Wordwide*

Summary:

The book presents the current status of superconductor science and technology. It focuses on the design, properties and applications of superconductor materials. The superconductor categories covered include type-I, type-II, bulk, hard, soft, oxide, fermions, organic, iron, Lanthanide-based superconductors, high temperature superconductors and superconducting metamaterials.

Oxide Superconductors

Srijita Basumallick

Unlike conductors and semiconductors, super conducting materials are relatively rare. Again, these materials exhibit super conductivity only at low temperature. In this chapter, an attempt has been made to present a brief historical background of discovery of super conductors. This is followed by presentation of unusual magnetic properties of super conducting materials, type 1 and type 2 super conducting materials, theories and hypothesis proposed to explain these properties of super conducting materials. Crystal structure of super conducting materials have been discussed.

Keywords

Type 1 Superconductor, Type 2 Superconductor, Yttrium Barium Copper Oxide, Cooper Pair, Meissner Effect

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Part of the book on
Superconductors

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ডিজিটাল সাংবাদিকতা
সম্পাদক:
ড. বৈদ্যনাথ ভট্টাচার্য ও অরিজিৎ ঘোষ

প্রকাশকাল: জুন, ২০২৩

প্রকাশক:
সেন্টার ফর ল্যাংগুয়েজ, ট্রান্সলেশন এন্ড কালচারাল স্টাডিজ
স্কুল অব হিউম্যানিটিজ
নেতাজি সুভাষ মুক্ত বিশ্ববিদ্যালয়
ডিডি ২৬, সেক্টর-১,
সল্টলেক সিটি,
কলকাতা-৭০০০৬৪

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মুদ্রক:
ফাইকাস
এন্টালি, কলকাতা

মূল্য: ৩৫০ টাকা

ডিজিটাল মাধ্যম ও স্বাধীনতা

ড. রীমা রায়

'ডিজিটাইজেশন' এবং 'ডিজিটালাইজেশন' দুটি ধারণা নিবিড়ভাবে যুক্ত এবং প্রায়শই ব্যবহৃত হয় এমন শব্দগুলি দৈনন্দিন জীবনে ব্যবহার করে থাকি। তবে শব্দদুটির অর্থ ও ব্যবহার একই নয়।। ডিজিটাইজেশন বলতে বোঝায় "অ্যানালগ ডেটার (লেখা, চিত্র, ভিডিও এবং পাঠ্য) ডিজিটাল রূপান্তর।" বিপরীতে, ডিজিটালাইজেশন বলতে বোঝায় ডিজিটাল বা কম্পিউটার প্রযুক্তি গ্রহণ করে বা তার ব্যবহার বৃদ্ধি করে শিল্প সংস্থা, সমাজ ও দেশের কাজে প্রয়োগ করা। সংবাদমাধ্যমও এই ডিজিটালাইজেশনের আওয়াতার বাইরে নয়। তথ্য প্রযুক্তির সাহায্যে গণমাধ্যম আজ দেশ, কাল, গন্ডীর সীমানা ছাড়িয়ে গেছে। এই এককে সেই কারণে, সাংবাদিকতার দৃষ্টিভঙ্গী থেকে ডিজিটাল মাধ্যমের বিভিন্ন স্তরের ধারণা লাভ করা যাবে।

তথ্য ও প্রযুক্তির ক্রমাগত উন্নতির ফলে সাধারণ মানুষের অস্তিত্ব ক্রমাগত কতগুলি ডিজিটে পরিণত হচ্ছে। তাঁর পরিচয়, যোগাযোগ নম্বর, ব্যাঙ্ক আকাউন্ট সবকটি বিষয়ের পরিচয় কেবলমাত্র কিছু নম্বর। কম্পিউটার চালিত সভ্যতায় বিভিন্ন কর্মপদ্ধতি যেমন পরিচালিত হয় কতগুলি বাইনারি ডিজিটের প্রোগ্রামিং এর মাধ্যমে, তেমনই বর্তমান সমাজ ডিজিটাল প্রযুক্তি চালিত হয়ে পড়েছে।

ডিজিটাল বিপ্লব

১৯৫০-১৯৭০-এর দশকে পৃথিবী জুড়ে বৈদ্যুতিন জগতে অ্যানালগ প্রযুক্তির পরিবর্তে ডিজিটাল প্রযুক্তির ব্যবহার শুরু হয়। কৃষি বিপ্লব বা শিল্প বিপ্লবের মতন এই ডিজিটাল বিপ্লবের কেন্দ্রীয় বিষয় হল – ব্যাপক হারে ডিজিটাল লজিক, মস ট্রানজিস্টর (MOSFETs), এবং সমন্বিত বর্তনী (আইসি) চিপ, এবং তাদের উদ্ভূত প্রযুক্তির সহকম্পিউটার, মাইক্রোপ্রসেসর, ডিজিটাল সেলুলার ফোন, ইন্টারনেটের গণউৎপাদন ও ব্যবহার। এইসব প্রযুক্তিগত প্রবর্তিত ঐতিহ্যগত উৎপাদনও ডিজিটাল বিপ্লবে ব্যবসা - কৌশলে রূপান্তরিত হয়েছে। ১৯২০ সালের পর থেকে ডিজিটাল প্রযুক্তির প্রায় সমগ্র ধারণাটাই কম্পিউটার সংক্রান্ত বিষয়ের মধ্যে আবদ্ধ হয়ে পড়েছে। এই ডিজিটাল প্রযুক্তির একটা বড় জায়গা জুড়ে রয়েছে তথ্যের আদান প্রদান বা যোগাযোগ বিষয়টি। অর্থাৎ এই ডিজিটাল সময়ে সমাজে গণ উৎপাদন বলতে আর বিভিন্ন রকম বস্তুকে বোঝায় না। বরং অনেক বেশী বোঝায় কম্পিউটার নির্ভর তথ্য উৎপাদনকে। বিশ শতকের শুরু থেকেই উৎপাদনব্যাবস্থা ঐতিহ্যগত শিল্প থেকে দ্রুত স্থানান্তরিত হতে

Descartes Spinoza Leibniz
by Rina Kar (Dutta)

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Decontamination Strategies and Technologies for Tackling COVID-19 Hospitals and Related Biomedical Waste

Rishav Sharma, Pinakiranjan Chakraborty, and Shraman Roy Barman

Abstract

The complexities of waste management have been enhanced by the arrival of the novel coronavirus disease-2019. Since the outbreak of COVID-19, biomedical waste (BMW) is being generating in huge amount worldwide by the isolation ward, institutional quarantine centres, COVID testing facilities and even household quarantine. The major contributors to the waste volume include personal protective equipment (PPE), testing kits, surgical facemasks and nitrile gloves. Discharge of new category of BMW (COVID-waste) is of great global concern to public health and environmental sustainability if handled inappropriately. It has been established that COVID

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Chapter 5

Combating the vectors and management of vector-borne diseases with essential oil nanoemulsions

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Abbreviations

AChE	acetylcholinesterase
CHIKV	Chikungunya virus
DDT	dichlorodiphenyltrichloroethane
DENV	Dengue virus
EONEms	essential oil nanoemulsion
EOs	essential oils
GABA	gamma-aminobutyric acid
IVM	integrated vector management
JEV	Japanese encephalitis virus
LC_{50}	lethal concentration 50
O/W	oil in water
O/W/O	oil-in-water-in-oil emulsion
ONNV	O'nyong'nyong virus
PIC	phase inversion composition
PIT	phase inversion temperature
RFV	Rift Valley fever virus
SDM	solvent diffusion method
TBE	tick-borne encephalitis
W/O	water in oil

Natural Products in Vector-Borne Disease Management. https://doi.org/10.1016/B978-0-323-91942-5.00006-9

NOSTALGIA AND THE CONSTRUCTION OF 'HOME' : MEMORY AND REMEMBRANCE OF THE EAST BENGALI MIGRANTS

SUBHASRI GHOSH

INTRODUCTION

Taking the 1947 Partition that created the two nation-states of India and Pakistan as the backdrop, this paper attempts to explore the intense sense of nostalgia deeply embedded in the psyche of the Hindu migrants from East Bengal (present day Bangladesh) who had to abandon their motherland following the Partition and seek refuge across the border in the Indian state of West Bengal. Culling information from oral narratives as also personal documents in the form of memoirs, the paper would highlight how, through the memories of a lost homeland, these first-generation migrants try to cling to their roots and heritage and try to pass these on to the next generations. Although the concept of a museum to honour the memories of a lost homeland is steadily gaining ground in India, on the lines of Holocaust memorials in Europe, it is essentially these memories that help in unraveling the human dimension of Partition and thus open up knowledge about its unknown facets. Thus under the rubric of what the UNESCO defines as intangible cultural heritage, memory plays a seminal role in the preservation and conservation of oral narratives that offer valuable insights into the mindscape of the migrants, the host population, the governments involved – a plethora of players involved in and with Partition.

At the stroke of midnight on 14 August/15 August 1947 as the whole world slept, India awoke to light and freedom. While for many it meant freedom from nearly two hundred

eleven

Invisible Borders

The Social and Mental Scape of Calcutta, Post-1947

Subhasri Ghosh

Introduction

This chapter seeks to flesh out the dynamics and varying equations played out in the heartland of an urban centre, located away from the margins of the nation-State, and show how within the very core there exist scales of marginalisation. Considering the city of Calcutta as the site of study against the backdrop of the 1947 Partition, this study explores the psyche of the inhabitants, which translated into fractured social spaces within the city, leading to the creation of pockets/enclaves/ghettos. While the physical demarcation of the border on maps and texts is a more visible marker of the divisiveness that tears asunder the lives of people, uprooting them from their natal set-up, psychological borders are more embedded and entrenched, that is, more 'felt' than 'seen'. Culling information from a wide array of sources, namely oral narratives, memoirs, government documents (including the Census and assembly proceedings), the chapter identifies the fractures amongst the residents of the city that eventually resulted in re-contouring their living patterns. Fault-lines operated at several levels—between the migrants and the local Hindu population (both sharing the same religion and speaking the same mother-tongue with variations in dialect), between the local Muslims and the migrants (both belonging to the same ethnic stock and often speaking the same

১৯৪৭-র দেশভাগ ও পুনর্বাসন : একটি পুনর্মূল্যায়ন

শুভশ্রী ঘোষ

মুখবন্ধ

দেশভাগ—এই চার অক্ষরের শব্দটির ব্যাপ্তি গভীর—এর সঙ্গে জড়িয়ে আছে অনেক অনুভূতি, অনেক অব্যক্ত যন্ত্রণা অনেক হৃদয়বিদারক কাহিনি। বিংশ শতাব্দীতে ঔপনিবেশিকতার চরম পরিণাম হিসাবে দেশভাগ মানব জাতির ইতিহাসকে বার বার ক্ষতবিক্ষত করেছে। ব্রিটিশ শাসকের Divide and Rule নীতির প্রতিফলন এই বিভাজন দক্ষিণ এশিয়ার বুকে প্রথম নেমে আসে ১৯০৫ সালের বঙ্গভঙ্গের মধ্য দিয়ে। যদিও প্রবল প্রতিবাদের সম্মুখীন হয়ে শেষপর্যন্ত বঙ্গভঙ্গ রদ করতে বাধ্য হয় ব্রিটিশ প্রশাসন, তা সত্ত্বেও তাঁদের অনড় মনোভাবের পরিচয় পাওয়া যায় যখন ইতিহাসের পাতা ওল্টালে দেখি এই দ্বিখণ্ডনের ছুরি কীভাবে টুকরো করেছে আয়ারল্যান্ড, ইজরায়েল ও ভারতবর্ষকে। বিংশ শতাব্দীর প্রথমার্ধে সংঘটিত এই তিনটি বিভাজনের যন্ত্রণা আজও ভোগ করে চলেছে এই দেশগুলি। Arie M. Dubnov ও Laura Robson তাঁদের সম্পাদিত Partitions: A Transnational History of Twentith Century Territorial Separation নামক গ্রন্থে উক্ত তিনটি বিভাজনকে এক সূত্রে গ্রথিত করার প্রচেষ্টা করেছেন।[১] Kate O'Malley তাঁর প্রবন্ধে পঁচিশ বছরের ব্যবধানে সংঘটিত আয়ারল্যাণ্ড ও ভারত ভাগের সাদৃশ্য তুলে ধরে ব্রিটিশ সাম্রাজ্যবাদী মানসিকতার ক্ষেত্রে যে ধারাবাহিকতা দেখা যায় তার প্রমাণ দিয়েছেন।[২] Lucy Chestor আন্তর্জাতিক সীমানা নির্ধারণের ক্ষেত্রে ভারত ও প্যালেস্তাইনের ঘটনাসমূহের নেপথ্যের ইতিহাস বিশ্লেষণের মধ্য দিয়ে এই প্রবহমান ধারার প্রতি দৃষ্টি আকর্ষণ করেছেন।[৩]

The Scourge of Domestic Violence in India

Looking Back and the Way Ahead

Subhasri Ghosh

Contents

Abstract

Domestic violence, in the Indian context, has most often been studied within the rubric of the feminist movement – how the feminists from 1970s onwards broke into the innermost domains of personal space to highlight the victimization of women by their near ones and drew attention of the government and the civil society to the menace leading to pro-active measures as also the socio-economic fallout of such violence. This chapter, while acknowledging the contribution of the women's movement in bringing to the fore the issue of violence perpetrated at home, argues that within the matrix of Indian society violence was an embedded feature throughout the nineteenth and twentieth centuries. The ugly face of domestic violence is no recent phenomenon since, if one flips through the pages of history in the colonial period, one can trace the prevalence and predominance of these violent behaviors. Though quantification of such violence from the 1970s and 1980s brought the phenomenon into the public domain, the chapter by rewinding to the colonial period and drawing heavily from first-hand narratives of contemporary women writers from across India, attempts to show that the past enmeshes into the present and that violence remained and remains a part and parcel of a woman's everyday domestic life. Even the remedies that are now being mooted have their roots in the colonial times. Taking a holistic view of the

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Structural control on polygonal impact crater rim geometry from Mare Crisium

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Abstract: Polygonal impact craters (PICs) with characteristic polygonal rim geometry are frequent on the surface of terrestrial planets and their respective natural satellites. Trends of their rim segments are considered to reflect the orientations of fractures/weak zones present in their vicinity. Mare Crisium (Fig.1) is a Nectarian-aged lunar basin (3.9 Ga) with a diameter of 740 km, present on the near side. Wrinkle ridges and polygonal impact craters, both simpleand complex, are widely present on this mare. It has been proposed that the 45° relation of simple PICs to weak structural planes does not hold everywhere, and the crater rim segments may show parallelism with fault strikes as both simple and complex PICs rims show similar trends [1]. In the case of Mare Crisium, we correlated the trends of 114 PICs (110 simple PICs;4 complex PICs) with wrinkle ridges using rose plots and frequency plots (Fig. 1). It has been observed that the dominant trend of wrinkle ridges is NE-SW (45^0-60^0) followed by NNW-NNE (330^0-345^0) and NW-SE (300^0-315^0, 315^0-330^0). Other trends include ~N-S (0^0-15^0, 345^0-0^0). Simple and complex PICs both show dominant trends in the NW-SE (315^0-330^0 for SPICs and 300^0-315^0 for CPICs) direction with subordinate orientation in the NE-SW (45^0-60^0) and ~N-S (0^0-15^0) direction. To ascertain if the trends of PIC rim segments and straight segments of tectonic structures (wrinkle ridges) had the same or different variabilities, F-tests with confidence levels of = 0.05, 0.025, and 0.01 were performed using the null hypothesis. The statistical correlations between simple and complex PICs with wrinkle ridges are accepted for all three confidence levels. It can be concluded that both simple and complex PICs align with the two dominant trends of the wrinkle ridges in Mare Crisium. Moreover, from the F-test, it can be ascertained that the wrinkle ridges possibly had control on the PIC rims' geometry, provided the null hypothesis for "the match of variation in trends of PIC rim segments (simple and complex separately) with the trends variation of straight segments of wrinkle ridges" is accepted. Further, geological and geophysical investigations are required to understand the extent of the control of such tectonic features on the rim orientation of polygonal impact craters.

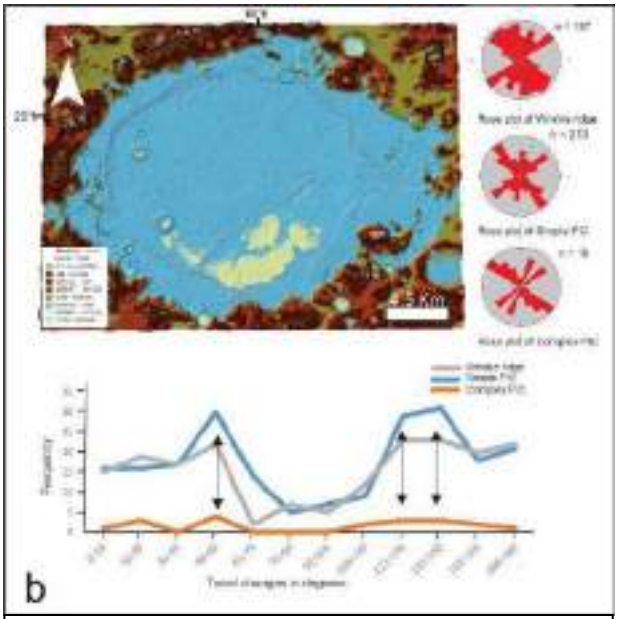

Figure 1: (a) Colored SLDEM of Mare Crisium with marked wrinkle ridges (dotted red lines); (b) Frequency plot of trend values (at 15° intervals) of deformational structures (wrinkle ridges here) and PICs' (simple and complex) rim segments from the Mare Crisium basin to understand the patterns and relationships among these features.

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Temporal and Spatial relation of Pit crater chains with Rima Hyginus, the Moon

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Rima Hyginus, situated on the southeast of mare Vaporum, is a graben system with trails of rimless craters (pit craters), with an arcuate shape having small straight segments within it. It is a geomorphologically complex region on the surface of the Moon. The NNW-SSE and WNW-ESE trending rille/graben is 220 km long and cut by another graben namely, Rima Ariadeaus. This graben system is thought to have formed due to dyke propagation at some shallow sub-surface depth. The absolute lunar model age, estimated through Crater Size Frequency Distribution using the buffered crater counting (BCC) approach and Neukum et al. (2022) production function, of the Rima Hyginus and its pit crater chain are found to be 590 Ma and 130 Ma respectively. Hence, the pit craters are formed much later than the Rima Hyginus associated with bounding normal faults. At Rima Hyginus, pit craters are situated within the graben and are aligned with the dominant NNW-SSE orientation of the graben system. This relation and the younger age of the pit crater chain compared to the graben refutes the proposition that pit crater chains initiate graben formation. For 16 mapped pit craters, there is a linear correlation between the length of minor axes (crater width here) of these pits and their measured depth, with an R2 value of 0.89. This value reflects that faults are responsible for the formation of the pit crater chain. The studied pit crater chain possibly originated due to reactivation of the bounding faults of the Rima Hyginus.

Keywords: Rima Hyginus, Pit crater chain, Graben

Acknowledgement: A Chandrayaan-2 science plan project grant from Space Applications Centre, ISRO is acknowledged

COMPARATIVE MORPHO-TECTONIC ANALYSIS OF LUNAR WRINKLE RIDGES USING TMC-2 AND ANCILLARY DATA SETS. A. S. Arya1, J. Thapa2, A. Kundu2, D. Dasgupta2, Amitabh1 and R. Basu2, 1Space Applications Centre, Jodhpur Tekra, Ambawadi Vistar, Ahmedabad 380 015, India, e-mail: **arya_as@sac.isro.gov.in**; 2Department of Geology, Asutosh College, 92, S.P. Mukherjee Road, Kolkata 700 026, India, joyita.thapa112@gmail.com.

Introduction: Wrinkle ridge is a common contractional feature formed on the surfaces of terrestrial planets, originating due to a combination of folding and thrust faulting. It is visualized as the superposition of a broad arch and asymmetric ridges. They are present across the lunar mare regions/basins and possibly formed and evolved after the emplacement of the recent mare basalt units [1]. These ridges are typically attributed to the shifting from expansion to net contraction once the moon began cooling post-3.6 Ga, which caused the global stress field to shift from extensional to compressional. Using ISRO Chandrayaan-2 orbiter's Terrain Mapping Camera-2 (TMC-2) ortho-images, the Digital Elevation model from the Chandrayaan-2 mission and ancillary data sets, we attempted to conduct a comparative morpho-tectonic analysis of wrinkle ridges from multiple lunar basins in the near side and analyze their stress-strain conditions including their likely time of formation.

Methodology and results: Topographic profiles of wrinkle ridges were generated using ArcGIS software from TMC-2 DEM superimposed on LOLA DEM data. The initial and end lengths from each profile were calculated using the profile curves and the Moon coordinate system after the line-and-length cross-section balancing method. In the topographic profiles of the wrinkle ridges, the initial length is shown as the length of the curve line. We calculated these lengths using the mathematical formula for calculating distance, and the shortening of the surface across the wrinkle ridge along the section lines as being equal to the initial length minus the final length [2]. Ortho-images, DEMs from the Terrain Mapping Camera-2 (Chandrayaan-2 mission) and LROC WAC image were utilized to map and study the wrinkle ridges in three mare regions: Mare Frigoris, Mare Serenitatis, and Oceanus Procellarum. The eastern part of Mare Frigoris is dominated by interconnected groups of wrinkle ridges with a variety of orientations (circular, branching, and irregular patterns). A prominent E-W orientation can be seen in wrinkle ridges. The shortening values range from 0.67 to 1.5 (average 0.3%) for the Frigoris' wrinkle ridge (TMC-2 covered). It should be mentioned that the wrinkle ridges close to the Mare Frigoris' eastern border exhibit shortening values between upto 1.17 (on average 1%). The amount of overall shortening of wrinkle ridges in Mare Frigoris was up to 1.5% (Figure 1). Wrinkle ridge systems in Oceanus Procellarum that are covered by TMC-2 had a shortening of 0.78%-1.9%. The Posidonius crater, located at the northeastern edge of Mare Serenitatis, contains a 1 km long wrinkle ridge visible on the floor of sinuous rilles as observed from TMC-2 orthoimages. Shortening across this wrinkle ridge ranges between 1.25% and 2.5% (Figure 2).

Absolute model ages of the wrinkle ridges were calculated using the crater size frequency distribution (CSFD) approach in order to establish the relationship chronologically. We have used the buffered cratered counting (BCC) method for wrinkle ridges as it aids in establishing the age of linear/curvilinear structural features on the lunar surface. With the aid of the cratertools software in ESRI's ArcGIS, wrinkle ridges were mapped as polygons and the postdated craters that were present on them were marked as three-point circles. The absolute ages of the lunar surfaces were calculated by fitting the derived crater counting statistics with the known crater production function for the moon [3]. In the central part of eastern Mare Frigoris, wrinkle ridges together with those creating the rim of the ghost craters formed around 1.4 Ga, while the wrinkle ridges towards the eastern boundary formed around 3.4 Ga (Figure 3). The absolute model age of the examined wrinkle ridge in Oceanus Procellarum is estimated to be 1 Ga (Figure 3). The wrinkle ridge on the Posidonius sinuous rilles floor spans a total of 15 kilometres. We used the buffered crater counting approach using TMC-2 ortho-images to estimate the age of this wrinkle ridge to be between 45 and 60 Ma (Figure 3).

POLITICAL SYSTEMS OF THE
UK, USA, USSR, FRANCE, SWITZERLAND AND PRC
in a Comparative Perspective

A key to understanding Comparative Government and Politics

DEBARSHI KHAMRUI

BioNext 2022- Frontiers in Modern Biology

Day3: Friday, 23rd September

Session B: Oral Presentation (Phase II) Morning Session

Venue: AIT Video Conference Room

Chair/ Co-chair: Dr. Srijan Haldar, Dr. Priyanka Bhowmik, Dr. Srijani Banerjee

Judge: Dr. Chiranjib Chakravartty, Dr. Manoj Kumar Singh, Dr. Moumita Gangopadhyay

10.00-10.10	Ms. Sruti Singha Roy, Dept. of Biotechnology, MAKAUT BN22-OP12 Title: **Understanding breast ductile carcinoma through sequence-structure study of mutated E-Cadherin protein**
10.10-10.20	Ms. Amrita Jasu, Dept. of Biotechnology, MAKAUT BN22-OP13 Title: **Studies on hexavalent chromium tolerance and its biological mode of reduction by a new strain of *Serratia marcescens***
10.20-10.30	Dr. Nilanjana Bhattacharya Nath, Dept. of Biotechnology, Swami Vivekananda Institute of Modern Science BN22-OP14 Title: **Comparative study on the effect of Lead & Mercury on the level of gonadal hormone during sexual maturity and theireffects on reproductive performance of catfish, *Clarias batrachus* (l.).**
10.30-10.40	Ms. Somdatta Bhattacharya, Dept. of Biotechnology, Adamas University BN22-OP9 Title: **Receptor specific interaction of arrestin in 5-HTR1B (Serotonin Receptor)-βArrestin-1 complex**
10.40-10.50	Dr. Avishek Chatterjee, Dept. of Agricultural Science, Swami Vivekananda University BN22-OP16 Title: **Genetic analysis and selection of terminal heat responsive morphological and physic-biochemical traits in bread wheat**
10.50-11.00	Ms Shrestha Sengupta, Dept. of biotechnology, Adamas University BN22-OP17 Title: **ANALYSIS OF THE CONNECTION BETWEEN THE INDIAN GUT MICROBIOTA WITH THEIR FOOD HABITS, GEOLOGIES, DIETARY PROPENSITIES AND WELLBEING**
11.00-11.10	Ms. Surjyatapa Sarkar, Dept. of Biochemistry, Adamas University BN22-OP18 Title: **Structural characterization of atypical ACC deaminases from potent PGPR strain *H. diazotrophicus* E19T**
11.10-11.20	Mr. Hindol Ray, Dept. of Microbiology, Adamas University BN22-OP19 Title: **Motility , an insight into pathogenesis of Acinetobacter baumanii**
11.20-11.30	Dr. Pranab Kumar Das, Dept. of Microbiology, Asutosh College BN22-OP3 Title: **AMELIORATING EFFECT OF Barleria lupulina ON X-Irradiated Oreochromis mossambicus.**
11.30-11.40	Ms. Tanushree Bhattacharya, Dept. of Microbiology, Adamas University BN22-OP21 Title: **Investigating The Antimicrobial Effect Of Neem And Clove In Preventing Plaque Formation In Periodontal Diseases**
11.40-11.50	Ms. Sreejita Ghosh, MAKAUT BN22-OP10: Title: **Antibiofilm Activity of Compounds from Leonurus sibiricus againstPseudomonas aeruginosa Biofilm: In Vitro and In Silico Study**

A Study of Floor-Fractured Craters on the Margaritifer Terra Region of Mars

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1.Introduction

Floor-fractured craters (FFCs) are impact structures showing intense modifications including slumps down crater walls, fractured and uplifted crater floors. Although they appear on the surface of every terrestrial planet, much of the fundamental information about FFCs have been gathered from the moon. FFCs on the moon commonly occur near volcanic provinces. However, Martian FFCs are found at close proximity to the dichotomy boundary and also adjacent to chaotic terrains and outflow channels, features that are absent on the Moon (Bamberg et al., 2013). Margaritifer Terra, Mars preserves an abundance of these morphological features, thus, representing an important region for study of FFCs. A total of forty-two (42) floor-fractured craters, diameter between 10 km to 154 km, are identified on the Margaritifer Terra.

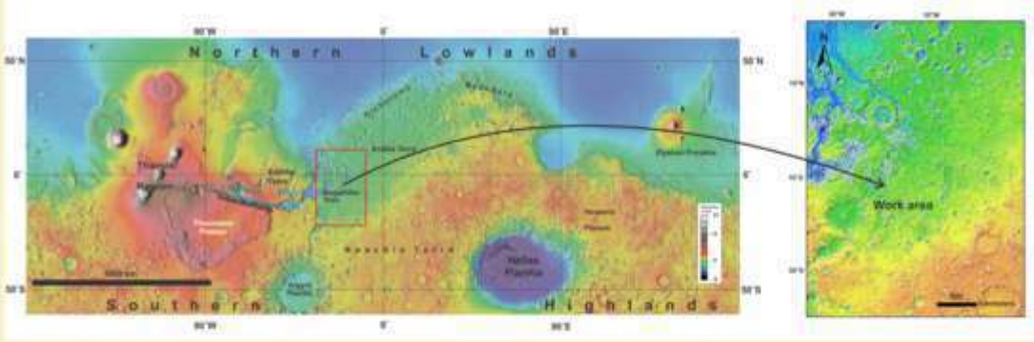


Figure 1: MOLA Colourized Elevation map of Mars with the study area of Margaritifer Terra marked in a red rectangle.

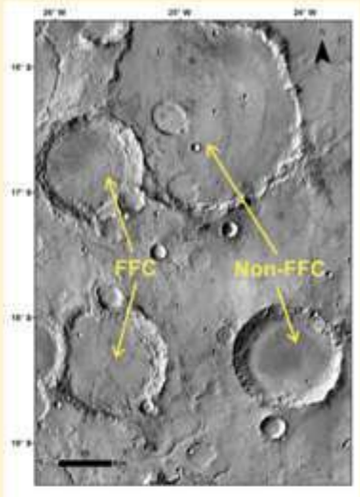


Figure 2: A THEMIS daytime IR image showing FFCs and non-FFCs in an area within the Margaritifer Terra region of Mars.

2. Characteristic features of FFCs

The floor, rim and wall features form the basis of identification and classification of FFCs (Jozwiak et al., 2012). Fractures can be radial, concentric or polygonal. Floor can be shallow (low depth:diameter ratio), deep (high depth:diameter ratio), convex upward and with or without central peak and with or without v-shaped moats. Radial fractures are observed in the crater. Knobs are present in between the fractures. At the northen wall of the crater mass movement is observed.

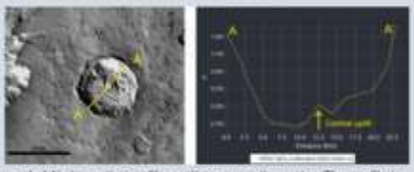


Figure 4: AA' shows the profile section across the crater. The profile is extracted from MOLA/HRSC Blended digital elevation model (DEM).

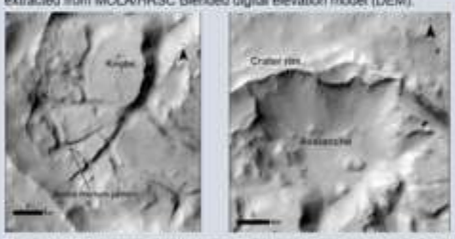
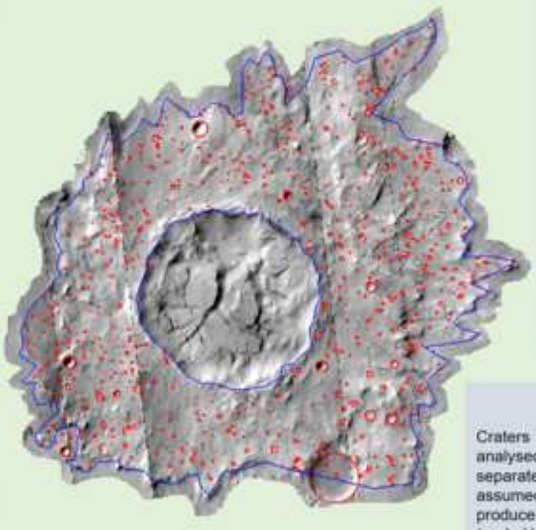


Figure 5: CTX images showing radial fracture pattern on the crater floor along with knobs (L). Avalance occurance visible on the northern part of the crater wall.

Figure 3: A unnamed crater (FFC), shown on Context Camera (CTX) images, in the Margaritifer Terra region showing intense fracturing and modification of the crater floor. Ejecta blanket of the FFC is well preserved that aids us in determining the time of impact. The crater is centred at **2.36°S and 31.84°W**.



3. Formation

The most widely accepted mechanism of formation of FFCs is intrusive volcanism. This is primarily because of their occurrence along the basaltic mare basin margins on the moon (Schultz, 1976). Craters that are located close to the volcanic areas of Mars may have a similar origin. Impacts lead to reduction of crustal thickness, thus, developing a zone of weakness. These zones allow for the preferential pathway for the rising magma. Rising magma can uplift the crater floor forming laccolith or sill formation in the sub surface.

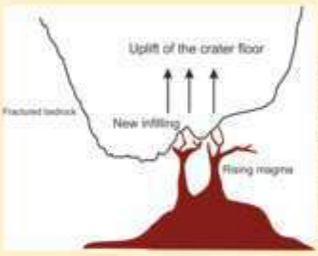


Figure 6: A schematic diagram of the possible model of intrusive volcanism on the studied FFC from the Margaritifer Terra region. The magma forms sills, dykes or laccoliths. They can also partially fill the crater floor. These processes will uplift and crack the crater floor.

4. Relation with chaos

Chaotic terrains are distinctive areas of broken terrain that primarily consists of polygonal, flat-topped blocks of various sizes, of which many preserve remnants of the surrounding upland surface. The studied FFC has two chaotic regions in its vicinity, Hydraotes chaos in the west and Aureum chaos in the east. The surface of the Aureum chaos dates late Hesperian while mantling deposits are mid to late Amazonian (Sapgnuolo et al., 2011). The formation of outflow channels and chaos are linked with groundwater or the global aquifer system. Crater infilling preferentially fractures along the rims due to structural weakness and groundwater flow. The magnitude of crater modification in the form of fracturing will vary depending on the aquifer system.

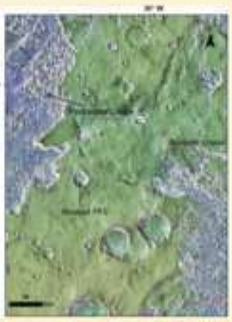


Figure 7: A MOLA Colourized elevation map showing the studied FFC and Hydraotes and Aureum chaos.

5. Age of the FFC

Craters were marked on ArcGIS software and the crater counts was then analysed using Craterstats2. The crater size-frequency distribution was separately done for the crater ejecta and the crater floor. The ejecta is assumed to give the age of the impact while the crater count of the floor will be produce the age of the most recent modification of the floor. An age of 3.53 Ga (early-Hesperian) of the crater ejecta blanket and 1.46 Ga (early-Amazonian) of the crater floor is estimated.

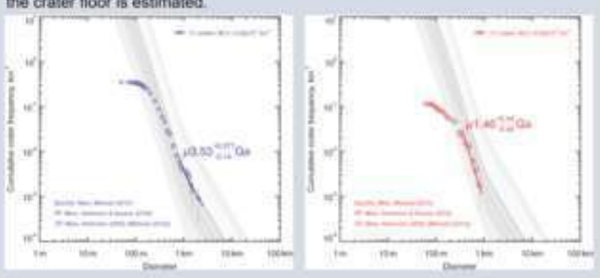


Figure 8: The ages of crater ejecta blanket (L) and Crater floor (R) derived from crater count analysis using Craterstats2 software.

6. Discussion

Margaritifer Terra region offers an important area to study FFCs and its formation, classification and chronology. The fractures in the crater floor are formed as a result of rising magma. The crater floor has reduced crustal thickness due to impact. This allows for preferential movement of magma, forming dykes, sills and laccolith in the subsurface. These intrusions uplift the crater floor thus giving a convex upward shape to the FCC. The interactions with subsurface ice and groundwater determine the intensity of fracturing and modification of the crater floor. The fractures also allow for the flow of water from groundwater sapping thus modifying fracture width. The close relationship of FFCs with chaos is studied further as the crater is in close proximity to chaotic terrain. The age of the impact predates the chaos formation date. However, the floor modification took place later i.e. early to mid Amazonian, which is also the period of intense volcanism in the region. Therefore, the fractures on the crater floor occurred at a later stage after the impact and the processes that led to FFCs maybe similar to the processes that led to chaos formation.

Future work plans

- The classification of FFCs is based on the study of FFC population on the Moon. No classification exists for FFC population on Mars.
- Martian FFCs are observed to be at close proximity to chaotic terrains, outflow channels and the dichotomy boundary, all features which are absent on moon. Thus, Martian FFCs may have different origin to lunar FFCs.
- There is an absence of timing of events leading to the formation and modification of FFCs on a global scale on Mars.

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Acknowledgement

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The study of wrinkle ridges and their control on the formation of simple polygonal impact craters in the southern Margaritifer Terra and its boundary with Noachis Terra, Mars

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1.INTRODUCTION

Mars is the most studied planet, after Earth, in the solar system from global to regional scales due to its comparable features with the primitive earth and as it is within the reach of space missions. Geomorphological signatures and records preserved in the rocks has confirmed that the planet has maintained tectonic and overall geological activity throughout its history (Watters and Schultz, 2010), and many of these geomorphic imprints are analogous to Earth. The surface of Mars is ornated with grabens, wrinkle ridges and lobate scarps which are signatures of deformation produced due to surface-parallel extension or compression (Watters and Schultz, 2010), made geologists very keen to study the tectonic processes as well as the sedimentary processes on Mars.

2. STUDY AREA

The study region mostly lies in the southern part of Margaritifer Terra extending to the north-western Noachis Terra The region is south of the Martian lowland-highland transition zone and represents the older highland terrain of Mars. In this present work, we study wrinkle ridges along with simple polygonal impact craters (PICs) in the old terrains of the southern highlands of Mars.This area has been selected as it has a prominent simple PICs craters and wrinkle ridges which are considered as fault propagation folds above blind thrust faults.

3. WRINKLE RIDGES AND CRUSTAL SHORTENING

Wrinkle ridges are signatures of deformation produced due to surface-parallel extension or compression (Watters and Schultz, 2010). Across the wrinkle ridges, various topographic profiles are drawn from digital elevation model (DEM). With the available data, the sub-surface stratigraphy of lava flow cannot be known. Therefore, to understand the geometry of the fault-propagated fold and the orientation of thrusts underneath them, the elevation offsets on the topographic profiles are to be relied upon topographic profiles drawn across the wrinkle ridges by observing the elevation offsets across them. The buried fault slopes towards the elevation offset (cf. Mueller and Golombek, 2004).

Topographic profiles across the wrinkle ridges generated through laser altimetry data have been used by them. DEMs generated from MOLA (Martian Orbiter Laser Altimeter) (Smith et al. 2001) data are the profiles mostly used.

Shortening Percentage = $[(L_0-L_1) * 100/L_0]$

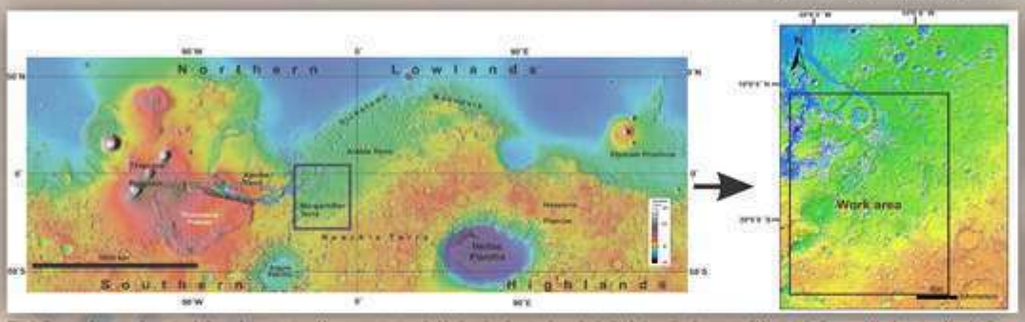

Fig. 1. Topographic map of mars (excluding polar regions) on Mercator projection, the black outlined rectangle marks the Study Area (Southern part of Margaritifer Terra and North-western Noachis Terra

Fig 2. THEMIS image of the area showing lines of section (red line) along which profiles of the wrinkle ridges are extracted from MOLA DTM.

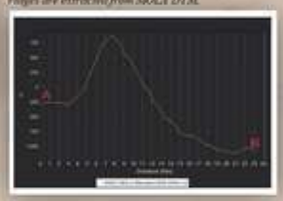

Fig 3 Schematic drawing illustrating the method for estimation of crustal shortening

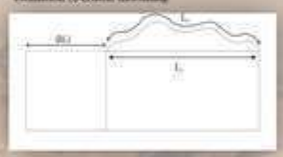

Fig. 4 AB marks the line of (C) profile section across NS Wrinkle Ridge

Wrinkle Ridge (WR)	Average Crustal Shortening (%)
WR 1	0.228818
WR 2	0.106382
WR 3	0.929346
WR 4	0.397978
WR 5	1.165628
WR 6	0.070414
WR 7	0.175828
WR 8	0.223345
WR 9	0.401971
WR 10	0.138125
WR 11	0.096305

Fig. 5 Table showing estimation of shortening across each wrinkle ridge set

4. PIC

A crater to qualify as a PIC has to have at least two adjacent straight segments in the rim and a clearly visible angle between them (Öhman et al. 2008). Craters on the Martian surface with diameters less than 7 km are referred to as simple craters (Pike 1980; Garvin et al. 2003). They have a polygonal outline with square shaped rims where individual arm is at an angle of ~45° with the strike of a pre-existing fault plane (Eppler et al. 1983; Öhman et al. 2006). According to Eppler et al. 1983 and Öhman et al. 2006, it is said that the straight edges of simple PICs have been formed during the excavation phase of the cratering process.

Complex craters, have diameters greater than 7 km (Pike 1980; Garvin et al. 2003). They are characterized by terraced rims and either a central peak or a pit or flat floor (Pike 1980). Due to the presence of planes of weaknesses collapse of materials from the rim takes place in the impacted rock body (Eppler et al. 1983).

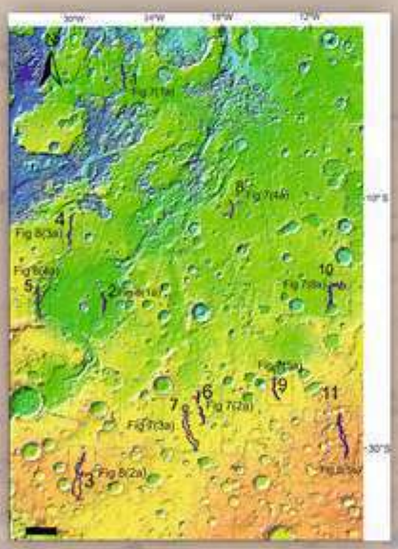

Fig:9 Structural Map of North-western Noachis Terra showing the wrinkle ridges (in red)

Fig 6. Simple PICs with the internal structures and with flat floor within a region of the study area.

5. TREND ANALYSIS AND COMPARISON BETWEEN WRINKLE RIDGE AND SIMPLE PIC

In Fig. 7 we can see that the rose diagram of Simple PICs of the study area shows matched trends while in Fig: 8 the rose diagram of the Simple PICs shows unmatched trend values. The trends have been marked with dotted coloured lines (pink and yellow respectively) to compare with the rose of WRs.

The rose diagram of simple PIC (Fig. 7) shows prominent NE-SW and NW-SE trends which lies at a ~45° angle with the ~N-S trending WRs, any of which could have affected the formation of simple PICs.

Therefore, control of faults underneath the N-S WRs on simple PIC rim geometry is established in this region.

6. DISCUSSION

- The area was affected by ~E-W oriented ~horizontal compression which resulted in formation of the wrinkle ridges.
- The wrinkle ridges induced shortening of the surface across them, the shortening percentage is between 0.09 to 1.1 which is compatible with shortening across wrinkle ridges on the planetary surfaces.
- Trend correlation between straight segments of simple PIC rims with straight segments along the axis of wrinkle ridges indicate that N-S striking segments of the thrust fault planes had a control on formation of the simple PIC rim segments.

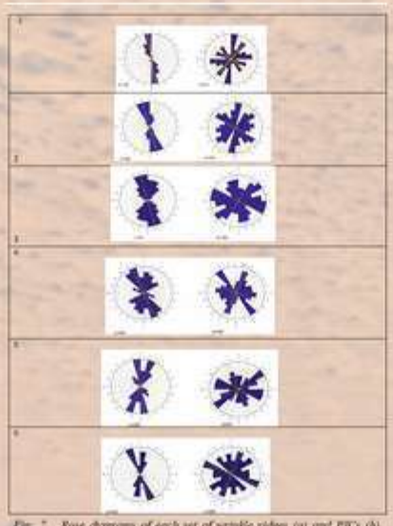

Fig. 7. Rose diagrams of each set of wrinkle ridges (a) and PICs (b). Comparison of orientation has been shown by the colour yellow and pink (in no. 5) matching trend lines between the roses of wrinkle ridges with that of PICs. The rose diagram of simple PICs (on the right) shows match with the trend of the WRs. The PICs were marked from ridges 1,6,7,8,9,10 respectively.

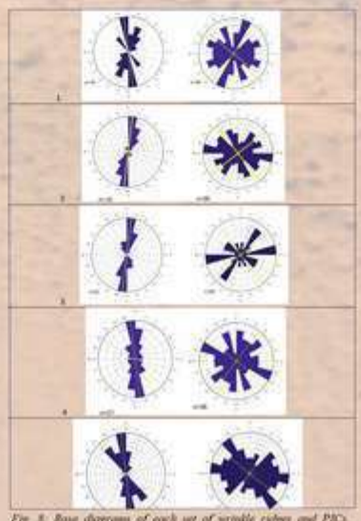

Fig. 8. Rose diagrams of each set of wrinkle ridges and PICs. Comparison of orientation has been shown by the colour matching trend lines between the roses of wrinkle ridges with that of PICs. The rose diagram of simple PICs (on the right) does not show any match with the trend of the WRs. The PICs were marked from ridges 2,3,4,5,11 respectively.

7. REFERENCE:

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An estimation of age and palaeodischarge values across valley networks from the Noachis Terra region of Mars

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1. Introduction

Palaeochannels on the Martian surface has been a matter of scientific interest since their discovery [1, 2]. Mariner 9 mission, launched in 1971, discovered water-flow features on the surface of Mars. Since then, the availability of newer datasets from recent space missions have led to new findings as well as modifying old literature. Palaeochannels on Mars are generally classified into three types namely 1) outflow channels, 2) valley networks and 3) gullies [3]. Valley networks are branching and meandering network of valleys that resemble terrestrial river drainage basins.

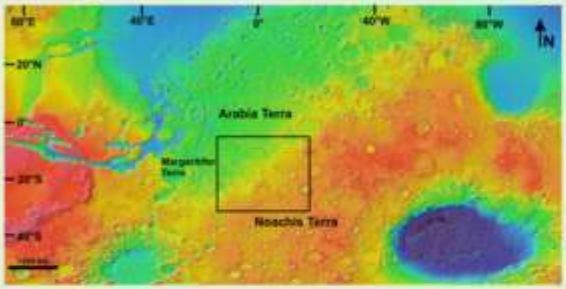

Figure 1: MOLA image showing the work region (in black rectangle) where the four valley networks have been identified and mapped. Most of the palaeochannels originate on Noachis Terra and towards the north owing to the difference in elevation, as visible in this MOLA map.

2. Geological background of the study area

The present work is on four valley networks in the Noachis Terra region. The terrain of Noachis Terra (Noachian age is from 4.1 to 3.74 Ga) consists of high-relief outcrops that are heavily cratered and have uneven to rolling topography, marked by local valley networks, grabens and wrinkle ridges [4]. Channels, the proposed pathways of water, are common on this surface. The Noachis Terra and Margaritifer Terra regions of Mars has high palaeochannel densities [4]. The palaeochannels of the Margaritifer Terra have been worked upon by earlier workers [5], but information about the morphology, past dynamics and evolution of the palaeochannels within the northern Noachis Terra are unavailable in published literature.

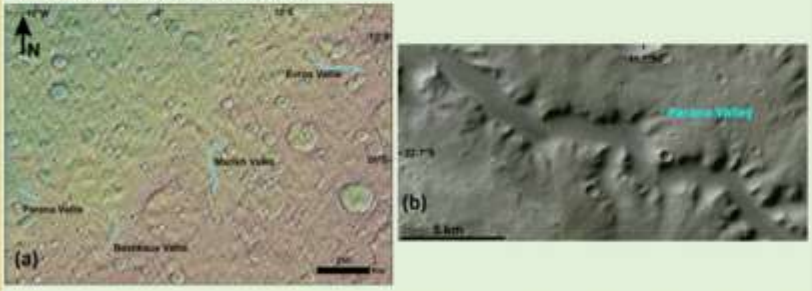

Figure 2: (a) Blended MOLA and THEMIS image of the work area (northern Noachis Terra). The four valley networks studied in the present work (Parana Vallis, Bashkaus Vallis, Marikh Vallis and Evros Vallis) are shown in the figure. The Bashkaus and Marikh vallis have a general flow direction from south to north while, Evros and Parana flow from east to west, mainly owing to the local topography. (b) A zoomed-in CTX image of Parana valley.

3. Palaeodischarge calculations

For Palaeodischarge calculations, formulas used are as follows:

- Discharge, Q = hWu, where 'h' → channel depth or thickness of the water column; 'W' → channel width; 'u' → average flow velocity across the channel depth and width.
- Manning's equation; $u=(h^{2/3}S^{1/2})/n$, where S → channel slope and n → Manning's roughness coefficient.
- Darcy-Weisbach equation; $u = \sqrt{(8gRxS/f)}$; where Rx → hydraulic radius; g → 3.74 m/s^2 on Mars; S → slope in m/m; f → frictional factor.

The manning coefficient value calculated for Mars' surface is 0.0545 sm$^{-1/3}$ [6]. This value is used to calculated the friction factor. Palaeodischarge calculations were done from a total of 40 profile sections across the four valley networks (ten for each valley network). Estimates of palaeodischarge under both bank-full conditions as well as normal flow (10% flow depth) conditions through the Darcy-Weisbach equation [7, 8] shows a combined influence of width, depth and channel slope (shown in Table).

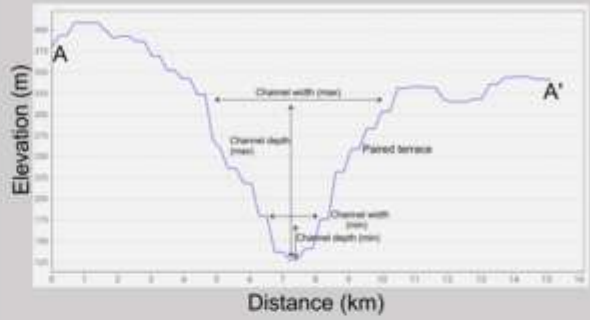

Figure 3: A profile section of Marikh valley generated from MOLA digital elevation model. Different channel parameters used for calculation of palaeodischarge are shown.

Valley network name	Length (km)	Average width (m)	Average flow depth (bank-full) (m)	Average flow depth (10% depth condition) (m)	Mean slope (degrees)	Mean discharge (bank-full condition)	Mean discharge (10% depth condition)
Bashkaus	302	520.5	6.71	1.735	1.102	15.728	0.345
Evros	335	309.5	3.68	0.705	1.614	3.482	0.124
Marikh	1280	535.5	4.05	1.040	0.613	5.955	0.140
Parana	350	245.5	7.47	1.295	1.838	11.224	0.270

4. Age of the valley networks

The well established method of buffered crater counting (since valleys are linear features), following the principle of crater size-frequency distribution, is used to obtain the ages of the valley networks [9, 10]. High-resolution Context Camera (CTX) images were used for marking craters in ArcGIS software with Cratertools add-in. The crater size and frequency data were analysed on Craterstats2 to plot the best-fit line and derive the model age.

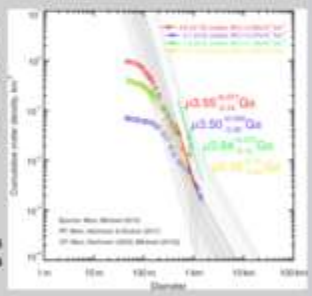

Figure 4: Model CSFD ages of the four valley networks. Bashkaus valley (red); Evros valley (purple); Marikh valley (green) and Parana valley ( )

5. Discussion

- An age of early to mid Hesperian is obtained for the valley networks which is consistent with Margaritifer Terra valley network ages.
- It is observed that a combination of flow depth and channel width bears more control on palaeodischarge rates.
- Under bank-full conditions, palaeodischarge rates were controlled mostly by flow depth, followed by minor control of channel width while, slope least affected the discharge.
- In case of normal flow conditions, the palaeodischarge rates were mainly regulated by channel width. Flow depth also had a considerable role in affecting the paleodischarge rates, while channel slope had negligible impacts.

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Contrasting groundwater level within two adjacent region of Mars

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Surface of Mars comprises of a basaltic upper crust composed of plagioclase, pyroxene and olivine. Many evidence hold mineralogic fingerprints of water activity. Clay minerals provide widespread signature of early weathering, hydrothermal, and diagenetic aqueous environments. Thaumasia Minor (TM) and East Coprates planum (ECP) are two adjacent regions located close to the equator differ from each other in a few distinct geological aspects. TM mainly consists of Late Noachian volcanic unit, possibly blanketed by volcaniclastic lava flows. ECP consists mainly of Late Noachian highland unit which are sparsely to extensively weathered. This signifies, TM has experience volcanism till the late Noachian period while volcanism had ceased in ECP by then. TM is more deformed and higher elevated than ECP. Both TM and ECP are ornated with deformation features including numerous impact craters. TM lacks in any signature or structure that indicates the presence of flowing water on the surface which conforms an unruffled geomorphology devoid of fluvial weathering. In contrast, ECP is characterized by fluvial and basin deposits.

Outflow channels, that form as a result of meteoritic impact is observed in ECP but not in TM. Outflow channels originating from the crater are migrating northward. Moreover, Her Desher Vallis (located in ECP) appears to have formed from a graben lying south of it. Spectroscopic analysis is carried out using CRISM (Compact Reconnaissance Imaging Spectrometer for Mars) data from the two regions to delineate the mineral assemblages present there. The main contrasting mineralogy identified is that crater walls of TM have Al-phyllosilicates. On the other hand, crater and valley walls of ECP have Fe/Mg phyllosilicates. Hence it can be said that TM have probably undergone the process of pedogenesis whereas ECP have undergone the process of groundwater sapping. The present research executed on the TM and ECP produce a clear image of contrasting mineralogy of two regions in such geographical proximity. The study suggests that groundwater table is higher underneath the ECP as compared to TM. Therefore, even though impact craters and grabens are more widespread in TM, groundwater found it easier to escape from these structures within the ECP.

Keywords: Groundwater, craters, grabens, spectoscopy, phyllosilicates

Acknowledgement: ISRO MOM-AO research grant is acknowledged.

11

Hydrogeomorphic Significance of Sinuosity Indices: A Case Study of Rakti Khola on Darjeeling Himalayan Piedmont, West Bengal, India

Bipasha Chakroborty[1] and Subhadip Gupta[2]

Abstract

Sinuosity indices are such measures that are used to represent the occurrence of a change in channel planform. The present research paper deals with the channel shifting of the lower Rakti Khola channel, which is one of the important tributaries of the Balasan river. It can also be considered as a river of the Mahananda river system, lying on the piedmont zone of Darjeeling Himalayas. An initiative is undertaken to estimate the change in channel planform of lower Rakti Khola under the mouza of Kurseong, Makaibari TG, Longview TG, Bamonpokhari forest, Rohini TG, Simulbari TG, Ruhinir chhat, Panchkulguri, Nimai through the measurement of sinuosity indices. Path of lower Rakti Khola is extracted from LANDSAT TM (for the year 1998) and LANDSAT OLI (for the year 2010 and 2020). Air distance, channel index and valley index are estimated to measure sinuosity indices of the studied portion of Rakti Khola. The hydraulic of lower Rakti Khola has been

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13

Transfer Mechanism of Sand-Sized Finer Bed Sediment Particles in Riverine Environment: A Case Study of Rakti Khola, Darjeeling District of West Bengal

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Abstract

This paper is associated with the sand-sized finer bed sediment particle transfer mechanism in the selected reach of the Rakti khola under the Sukna region of Darjeeling district. The objective of this research is to try to explain the transfer mechanism of sand-sized finer bed sediment through the magnitude of sorting. The sand-sized bed sediment samples are collected from channel bed boundary of Rakti khola near the Balasan-Rakti confluence. The sorting magnitude of sand-sized particles has been calculated by using the phi-class distribution data in Gradistat software. The magnitude of sorting is used to interpret the transportation dynamics in the fluvial environment and the probable depositional environment of the settled sediment at bed. A riverine reach of Rakti khola channel is characterised by the spatial differentiation in the magnitude of sand size, which may indicate the influence of differentiation inflow type along and

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Assessment of Environmental Flow of Mahananda River in Darjeeling Himalayan Piedmont Region, West Bengal, India

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Introduction

e-Flow is such a concept which refers the minimum flow to maintain the riverine environment. Maintenance of natural patterns of longitudinal and lateral connectivity in river-floodplain systems determine the ability of many aquatic species to move between the river and flood plain or between the main river and its tributaries. Loss of such kind of connectivity can lead to local extinction of species (Arthington, 2003). Iyer (1998) stated that water itself is a part of nature and one cannot presume to allocate water to nature and the minimum flow or environmental flow in rivers is better than no flow condition. The stress is given on the terminology of 'natural flow' than the 'minimum flow'. e-Flows are needed for maintaining the river regime, making it possible for the river to purify itself, sustaining aquatic life and riparian vegetation, recharging ground water and supporting (Sharma, 2005). The emerging science of environmental flow aims to provide the balance between the human use and the conservation of natural water resources. Government of India constituted Water Quality Assessment Authority (WQAA) to look after the rivers to maintain 'minimum flows in rivers to conserve the ecosystem'. The e-Flow assessment should be river and site specific. No research has ever been done under the supervision of State Government of West Bengal as well as India regarding site-specific e-Flow assessment over any river under its jurisdiction. Academic institutions have not even been thought about the necessity of e-Flow assessment of streams. The objective of the present research is to assess the volume of e-Flow in riverine reaches (stretch-specific) of Mahananda river at Gulma under the geomorphic region of Sukna of Darjeeling district of West Bengal. Mahananda river is considered as the primary channel in Sukna geomorphic region. Wetted perimeter method is one of the popular methodologies which are used to determine the environmental flow at a particular reach of a river. Wetted perimeter means the perimeter of the cross-sectional area of bed and bank boundary of stream from wetted edge to wetted edge. Wetted perimeter is calculated on the basis of recorded width and depth of the recorded cross-sections across the studied channel. It is basically a cross-section-based study. Wetted perimeter of the cross-sectional site (CSS) is estimated after California Department of Fish and Wildlife Biologist (King, 2013). This particular methodology is very useful for those rivers, where gauge data is not available. But it demands tedious field work to record the CSS-based seasonal width and depth data at least for a single year. Width and depth of the studied CSS are recorded. Cross-sectional area, wetted perimeter, hydraulic radius has been estimated by using the empirical equations. Stream velocity is determined by using the Manning's equation. Manning roughness factor (n) has been decided on the basis of the observation during field survey. Stream discharge at a particular site is measured by multiplying the cross-sectional area and stream-velocity at that particular GPS location. Graph has been prepared, where the stream discharge and wetted perimeter are plotted in the abscissa and ordinate respectively. Magnitude of wetted perimeter is recorded against several magnitude of stream discharge to get the wetted perimeter-discharge curve for a particular geo-referenced point at a particular CSS. Maximum and minimum discharge has to be incorporated. This kind of curve may able to mark the minimum possible discharge, necessary for the subsistence of aquatic habitat at studied site of Mahananda channel. Effort is given to mark the first, second breakpoints of maximum curvature of that wetted perimeter-discharge curve. The first breakpoint is considered as the threshold discharge (minimum discharge), under which the food production procedure declines rapidly at the studied location of the Mahananda river. The second breakpoint is considered as incipient asymptote (Kim and Choi, 2019; Tharne, 2003) which is assumed to favour the optimum food production at the said location of the

Technology Reinforced Manuscript Writing: More than a choice in Post-pandemic era

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Abstract

During the pandemic and in the post-pandemic era, technology reinforced manuscript preparation and their timely submission has become more than a choice. Real time knowledge dissemination, clinical findings on public health has served tremendously in combating present pandemic. Citations of relevant published documents are integral part of all scholarly works. Technical writing involves literature collection, reading, and compilation as references andbibliography into a manuscript and it is a tiresome process if performed manually. Large data handling is the recent challenge to the information society as digital data are growing in geometrical proportion. Reference managers are the citation assistance tools for better managements of references of diverse nature and origin. These information sorting applications have revolutionized article writing and citation procedure, which eventually resulted in a publication boom in the last decade. Optimum blend of innovation, creative writing, information management tools, web-based content authenticity checking tools and grammatical error- checking tools has expedited the manuscript submission process. Such modern attributes have brought new light to technical writing and helped to overcome constraints of time delay, accidental plagiarism and vocabulary, while these facilities are still limited to tech-savvies and well-funded institutions due to the digital divide and dominance of proprietary software.

Keywords: Citation, Plagiarism, Post-pandemic era, Reference Manager, Technical writing.

1. Introduction

Scholarly writing involves the representation of facts, the establishment of hypotheses, drawing inferences and discussing results, and keeping track of the ongoing progress in the specified field (Muhammad, 2016). These technicalities demand a transparent understanding of the research problem, scope, limitations, methodologies opted and available technology-dependent reinforcements (SPIE, 2018). Technical or scholarly manuscript preparation is based on the submission criteria laid by the publishing agency, which includes coherent reference citation, content authentication, content length etc. Manuscript writing is an ancient scholarly practice through which

Prisoners of Space and Time

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Prisoner of time

Right from the dawn of the ages, human beings have always been a prisoner of time. Time has kept on flowing uni-directionally, unconditionally, and above all monotonously without giving us any break at all. Probably it presents us with the best natural example of continuity. Great men like Albert Einstein have pondered over the nature of time and tried to understand its fabric. But it is unfortunate that the mystery of time remains unsolved till date. Man has almost reconciled to his fate of not being able to gain control over the flow of time and use it to his advantage. There is no going forward or backward in time for a man. Once a moment passes it will be lost forever in the infiniteness of time. All of us long for our childhood days and hope against hope that it would be great to be able to relive those days once more in a lifetime. Likewise, a point of time in the future cannot be lived before it actually arrives by the natural flow of time. We are the captives of time in a helpless situation. The invisible prison holds us tight and we have no way out. This victory of time over man is so comprehensive that it has compelled him to live within the vicious cycle of life and death. The much-awaited time machine is just an item of fiction for the time being and probably for many years to come. Our knowledge of time is so constrained that even the thought of a time machine seems to be an utter luxury for the time being. Our ignorance has pushed us to such a point that time itself seems to be an illusion to us!!! The illusion of time keeps wielding its magic over us.

Prisoner of Space

Most of us will think that we are free to move around in space with unlimited freedom. Indeed we can move freely in the directions forward and backward, up and down, left and right. That allows us three-dimensional motion through space. In that sense, we are really free to move spatially. Here we will consider a different point of view of motion through space.

We know that we can move through space. No doubt about that! Now we ask a question: how far can we move or how far have we moved till now? We know that we have travelled to the moon whose distance is 3,84,400 kilometres from Earth. Maybe we will travel to Mars in the near future which is at a distance of 179.3 million kilometres from us. That's all!! Which is our nearest star? Most of us know that it is Proxima Centauri situated in the Alpha Centauri system. It is situated at a distance of 4.2 light years away from us. Now one light year is the distance that light travels in a year at an enormous speed of 300,000 kilometres per second. Now if we calculate we see that, 1 light year = 9461,000,000,000 kilometres.

Our Latest Technology

Nasa's Juno probe is currently one of the fastest spacecrafts built by man. It was placed into an orbit around Jupiter in July 2016. It briefly clocked around 2,66,000 kilometres per hour (1,65,000 miles per hour) making it one of the fastest till date. This was certainly assisted by the sun's own gravity. Helios I and II, which started their journey way back in the 1970s reached speeds of around 2,41,000 kilometres per hour (1,50,000 miles per hour). Nasa's Parker Solar probe is set to beat all these records. By December 2024 it will be at its

বিভিন্ন বিশ্ববিদ্যালয়ের দর্শনের সাম্মানিক স্নাতক ছাত্রছাত্রীদের জন্য নির্ধারিত পাঠ্যসূচি অনুসারে লিখিত।

অন্নংভট্ট বিরচিত

তর্কসংগ্রহ

দীপিকা-টীকাসহ

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ড. সমরেন্দ্র ভট্টাচার্য

এম্.এ. (দর্শন ও মনোবিদ্যা), পি-এইচ্.ডি. (কলি. বি.)
প্রাক্তন বিভাগীয় প্রধান অধ্যাপক, আশুতোষ কলেজ, কলকাতা;
'পাশ্চাত্য দর্শন', 'পাশ্চাত্য দর্শনের ইতিহাস', 'পাশ্চাত্য যুক্তিবিজ্ঞান',
'মনোবিদ্যা', 'সমাজদর্শন ও রাষ্ট্রদর্শন', 'দার্শনিক বিশ্লেষণের ভূমিকা',
'সাম্মানিক নীতিবিদ্যা' প্রভৃতি গ্রন্থের প্রণেতা।

অধ্যাপিকা ডলি সাউ এম্.এ., এম.ফিল.

সহকারী অধ্যাপিকা, দর্শন বিভাগ, আশুতোষ কলেজ, কলকাতা

কর্তৃক সম্পাদিত

2023

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Education: A Tool for Women Empowerment

Rina Kar (Dutta)

Objective of the Study:

Human rights highlight that there should be no discrimination between men and women. It is considered to be a fundamental right because being a human, he/she is entitled to enjoy this right from his/her birth. Women are one of the most integral component of the society but society often deprives her of her basic rights. In our society genders are not treated equally. Gender inequality remains a major barrier to human development and this discrimination is entrenched within the social fabric. Men try to dominate women, voices of women are often muffled and they are often denied their rights. Though gender inequality cannot be fully eliminated yet some educated people have made conscious attempts to advocate and overcome gender equality. Women empowerment itself expounds that social rights, political rights, economic stability, judicial strength and all other rights should be equal for women. Women empowerment refers to increasing the spiritual, political, social, educational, gender or economic strength of individuals and communities of women. But it is very much dependent on many different variables that include geographical location, educational status, social status and age. Though education is considered to be a fundamental right for all citizens yet this most fundamental right "Right to Education" often remains out of bounds for women. But this is a very powerful tool for reducing inequality in our society. This article tries to identify the barriers to women empowerment and how these could be overcome by using education as a tool.

Educational Empowerment:

Empowerment means moving from enforced powerlessness to a position

Chapter 1

How the world is battling against COVID-19? – A brief review

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Abstract

The disease COVID-19 has exposed the whole world to a new challenge from December 2019 till now where the survival of human beings faces an alarming phase. Human, with their intellectual knowledge is trying their level best to unlock the lock made by SARS-CoV-2, the causative virus of COVID-19. So far various remedial aspects have been introduced worldwide to fight against the deadly pathogenic virus which has been briefly summarized in this article. Regardless of the above-discussed scientific inventions, we must unite to defeat COVID-19 and build a healthier, more equitable world by maintaining safety rules and regulations along with social responsibilities and education. We have a strong belief that one day our world can surely find a new way to win the war against COVID-19.

Keywords: COVID-19, Medicines, Nano-based techniques, Natural therapeutics, Vaccines

Introduction

The World Health Organization (WHO) declared COVID-19 a Public Health Emergency of International Concern on 11th March 2020 and till date (May 24, 2022), it has already taken more than 6302K lives and infected 52.85 million people globally. The infection has been confirmed in 213 countries and territories. From Wuhan, Hubei province of China the epicenter of the disease

Chapter 2

On the Origin Debate and Plausible Future Endeavors of COVID-19

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Abstract

Globally, we are undergoing compelling changes in virtually every branch of the society and every aspect of our daily lives over the last couple of years due to the COVID-19 pandemic. In the words of Melinda Gates, the famous American Philanthropist, the pandemic has literally "magnified every existing inequality". There has been much talk and an ongoing debate on the origin of SARS-CoV-2 (or the novel coronavirus) as to whether have evolved purely naturally or has the contaminating element of human intervention somewhere in its trajectory. Proponents of the pure 'natural evolution theory', some of whom are bigshots in the field of virology have seem to take up great effort to stamp their authority right from the very early days of the pandemic on the slow natural evolution of the virus from its ancestrors by several publications in high-profile journals. These well-cited papers however provide rationals

Chapter 3

Covid-19 Pandemic: The Economic Impact on Tourism

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Abstract

Novel Corona Virus, SARS-CoV2, disease popularly termed as Covid-19, a yet unknown deadly virus before its outbreak, took a toll on the global economy from March 2020 for the next two years. A naïve virus first found in Wuhan in China suddenly became a global threat with its extremely contagious character and lethal health outcomes. Indian economy, with a 1.2 billion population, was hard hit by the Covid-19 pandemic with disastrous aftermath on almost all sectors of the economy. To restrict the spreading of the virus, the Indian Government adopted global standard norms like complete banning of international travel, restricted movement within states of the country, and shutting down of the hotels and hospitality industry. These steps proved fatal for the global as well as Indian travel and tourism sectors. Tourism is one of the most critical sectors for the global economy with its prowess to garner substantial foreign earnings and a significant number of jobs. Thus the downfall of tourism also contributed to the shattering of the global as well as Indian economy. Several policy implementations and the return of the economy to normalcy helped in the gradual recovery of the tourism industry in India and the world.

Chapter 4

Study of initial hundred days of COVID-19 outbreak in India using SIR model

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Abstract

All over the world, COVID-19 had created a pandemic situation from early 2020. Since then, many attempts are made to understand different aspects of this complex situation e.g., understanding pandemic spread, peak time prediction etc. Several epidemiological models are available to perform these tasks alongside other machine learning models. Here, we study the disease-spreading behaviour in India during the initial 100 days of a pandemic outbreak using both real data and the classical Susceptible-Infected-Recovered (SIR) model and thereby predicting possible peak infection time considering the first case observed in the country during March 2020. In end, we also mentioned the consolidated guidelines as instructed by the Ministry of Home Affairs (last week of March 2020) to combat the spreading of infection and minimize the impact of the pandemic in our society.

Keywords: COVID-19, pandemic, India, Susceptible-Infected-Recovered (SIR) model

Introduction

Corona-virus disease (COVID-19), caused by the novel coronavirus SARS-CoV-2, has presented a challenge before the world. It all started with the first

Chapter 5

Impact of COVID-19 Pandemic on Biodiversity and its Conservation

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Abstract

Over the centuries a number of disease outbreaks have caused loss of human life worldwide. The recent outbreak of COVID-19 pandemic and associated global lockdown affected not only the human health but it also impacted socially and economically the different ecosystems of the world. This article provides an overall impression of the effect of the COVID-19 pandemic and global lockdown on biodiversity and its conservation. The restrictions and lockdown imposed by different governments worldwide during the COVID-19 pandemic period reduced the industrial and automobile emissions that led to a decrease in pollution which not only improved human health but also wildlife and biodiversity in general. But in contrast to a number of positive effects, the lockdown incurred financial loss and the conservation budget

Chapter 6

COVID-19 and after in Anthropocene: An Environmental Perspective

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Abstract

SARS-CoV-2 causing COVID-19 has been causing havoc across the globe since December 2019. The virus has compelled humanity to review and restructure its entire existence. Environment and its qualitative parameters have been reported to play a significant role in viral transmission, contamination, persistence and hence infectivity. All these have once again exposed the extreme vulnerability of Mankind. Man himself has traded ecology for economy and SARS-CoV-2 is one such dreaded outcome of the Anthropocene catastrophe. The only way ahead is resorting to Green Recovery which is to be thoroughly planned and strategically implemented. That too should be wisely and effectively managed to save the very survival and existence of humankind on this Planet, which is his one and only option.

Keywords: SARS-CoV-2, pandemic, zoonotic disease, climate change, sustainability, green recovery

Climate Change and Pandemics

Chapter 7

Cosmology inspired from Covid-19 virus

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Abstract

Taking inspiration from the shape of the Covid-19 virus, the standard entropy-area law was modified by Barrow to include quantum gravitational effects. A complex fractal structure is incorporated in the system, due to which a two dimensional surface behaves like a three dimensional volume with maximum complexities and intricacies. Using this modified entropy relation, Barrow holographic dark energy was constructed, which has a rich cosmological structure. Finally a deep rooted connection between virus and cosmology is set up using proper arguments.

Keywords : Cosmology, Covid-19, virus, holography, dark energy.

Introduction

Human race have been deeply affected by the Covid-19 virus over the past two years. The virus has run through the human society at all levels shattering the daily lifestyle to huge extent. Not only has the virus brought the normal daily activities to a halt, but also it has proved to be fatal at different phases. Loss of life due to the Covid-19 virus has been a familiar picture over the past couple of years. The insecurity and helplessness of mankind have been brought to bright daylight. In a nutshell, the virus has brought the humans to their feet, and once again nature has shown its might and how helpless we are

Chapter 8

Eco-epidemiological perspectives of Bats with emphasis on its association with Human Pathogenic Viruses

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Abstract

Bats are the second most diverse group of mammals distributed in all continents except Antarctica. As potential reservoirs for zoonotic diseases following recent identification of their involvement with Coronaviruses, Ebola, Marburg filoviruses, along with Hendra and Nipah paramyxoviruses, bats are receiving increasing attention in recent times. Their population structure, capability to fly, seasonal migration, dietary preference, daily movement pattern, colony composition (solitary or colonial), roosting behavior, hibernation and torpor, echolocation capability, and susceptibility to viruses, are the innate characteristics of bats that make them one of the most competent hosts to many viruses and other disease-causing agents. However, bats are an essential natural resource that play great role in providing many ecological and economic services viz. pest control, pollination and seed dispersal, nutrient distribution and recycling etc. To viably accommodate the intensification of agriculture and human settlements, deforestation and degradation of natural habitats are seen on a global scale that, in turn, disrupts the ecological habitats and eventually reservoir abundance and transmission dynamics of different zoonotic diseases. Various factors including environmental stress can lead to the

Chapter 9

Viruses in the landscape of human cancer

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Abstract

Viruses represent a significant proportion of cancer causing agent of human cancer context. Seven different viruses belonging to both DNA and RNA virus category have been found to be involved with human oncogenesis, namely: Epstein-Barr virus, Hepatitis B virus, Human papillomavirus, Human T-cell lymphotropic virus, Hepatitis C virus, Kaposi's sarcoma herpesvirus, and Merkel cell polyomavirus. These viruses may act at different stages in the multistep process of cancer development and progression. In this review, we have discussed the mechanisms of these seven different virus mediated carcinogenic processes and their mode of host immune evasion. Detail study on viruses in human cancer has led to the understanding of multidimensional therapeutic approaches for controlling unchecked proliferation. Here, we have enlisted some of the approved as well as ongoing clinical drug trials for controlling virus mediated cancer.

Keywords: Oncogenic viruses, Cancer, Immune evasion

Chapter 10

Phytogenic viral diseases in India: Concept on epidemic aspect and management

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Abstract

The Indian staple food crops, and other food crops that optimize the nutrition of the common population, suffer from a different viral disease that greatly reduces their productivity and quality. This situation is becoming worse because of the human population's growing food requirements and increasing difficulties in managing viral diseases effectively arising from global climate change and warming. Food production in India, driven by pressure from an increasing human population uses tons of red-marked pesticides per year: mainly fungicides and a part are insecticides for the control of vectors of plant viruses. A change in the cropping pattern and irrigation have provided a summer 'green bridge' along with different areas in south India for the Tungro virus that affects rice and its vector. Epidemics occur along the east coast if the weather is suitable. Red rot disease of sugarcane is promoted by poor drainage, contaminated farming material, and variation in the pathogen throughout the

CHAPTER 11

Bacteriophage: Medicinal use

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Abstract

The increasing demand for vaccines with cheap, stable and efficient properties is an interesting research field in recent years. One newly found alternative for the stable transport of vaccine genes to host is the use of Bacteriophages. Bacteriophages are viruses which infect bacterial cells and replicate within them, composed of nucleic acid and proteins (forms capsid). The friendly behaviour of bacteriophages towards eukaryotic hosts makes it perfect for the use as a carrier of vaccine gene to them. A eukaryotic cassette is also used along with antigen for this purpose. Phage-based vaccines can be either phage DNA vaccines or Phage-display vaccines. In this chapter, we have discussed the concept of bacteriophages in the field of modern vaccine developments, its importance and its applications till date.

Keywords: Phage-based vaccines, Bacteriophages, Immunization.

Chapter 12

Current advances in Marburg virus disease: A comprehensive review

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Abstract

MARV, which belongs to the genus Marburg virus in the family Filoviridae, produces a severe hemorrhagic fever in humans and nonhuman primates known as Marburg hemorrhagic fever (MHF). MHF is characterized by systemic viral replication, immunosuppression, and aberrant inflammatory responses, similar to the more well-known Ebola hemorrhagic fever. These disease's pathological traits contribute to a variety of systemic dysfunctions, such as hemorrhages, edema, coagulation irregularities, and, eventually, multiorgan failure and shock, which commonly result in death. The lack of licensed vaccinations and effective therapies is due to a lack of deep understanding of the pathological processes that lead to this terrible disease. This article will go

Chapter 13

A comprehensive insight into Acquired Immunodeficiency Syndrome and its present scenario

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Abstract

Acquired immunodeficiency syndrome is a syndrome which is marked by a severe form of infection with the retrovirus human immunodeficiency virus. The disease hallmarks are irreparable immunologic deficiency, rare malignant tumors and opportunistic infections. The process of transmission of acquired immunodeficiency syndrome is comparable to that of Hepatitis B. In hitherto, therapy is constricted in treating the complicated infections and tumors only. The spread of human immuno deficiency virus and the syndrome can only be decreased by preventive measures until the generation of an effective and

Chapter 14

Mosquito-borne Viral Diseases: A public health threat

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Abstract

Vector-borne viral diseases are transmitted by the bite of infected arthropod species such as mosquitoes, ticks etc. Virus that is transmitted by arthropod vectors are called Arbovirus, many of whose members are the cause of significant human morbidity and mortality. Over the last 30 years, the emergence and resurgence of arboviruses have posed a considerable global health threat. The ongoing global spread of the dengue viruses (DENV), along with the outbreaks of Japanese encephalitis virus (JEV), Zika virus, West Nile virus (WNV) and Chikungunya virus (CHIKV) have all served as a wakeup call that new epidemic may emerge at any time. This Chapter seeks to provide a brief overview of the arbovirus with few of its notable examples namely Dengue viruses, Japanese encephalitis virus, Zika virus, Chikungunya virus and West Nile virus, their outbreaks, present situation and some of the

Chapter 1

A Non-parametric Time Series-based Analysis of Rainfall Variability in Different Agroclimatic Regions of West Bengal

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Abstract

Long-term and short-term changes in the rainfall regime are well established climatic variability in the case of West Bengal and such variation predominantly influences the agrological systems especially the agricultural water management practices within the domain of the rainfed Aman cultivation. This study, therefore, envisages the long-term (30 years), decadal and seasonal changes in the rainfall patterns of six selected districts of West Bengal (i.e. Darjeeling, Koch Bihar, Murshidabad, Paschim Medinipur, Puruliya and South 24 Parganas) situated in different agroclimatic regions. Using non-parametric Mann Kendall's (MK) Test and Sen's Slope estimator, this study finds out the monsoonal rainfall and the annual rainfall is decreasing at a concerning rate at different statistical significance levels ($\alpha = 0.1, 0.05$ and 0.01) in the southern and western agroclimatic regions in West Bengal in the last 30 years (1991-2020). Moreover, the decadal analysis of MK test depicts the declining trend is more prominent in the decades 2001-2010 and 1991-2000 consecutively whereas no significant trend has been identified in 2011-2020 in the aforesaid region. Interestingly, an incremental decadal trend in the monsoonal and pre-

Chapter 2

Combating Climate Change: Creating Sustainable Cities

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Abstract:

Over half the world's populations are city dwellers accounting for 78% energy consumption and over 70% global CO_2 production and can thus be considered the major drivers of climate change. Cities are now expected to play significant roles in countering the adversities of climate change by shifting to low carbon practices, renewable energy sources and thus strive towards climate-resilient growth and development. Pro-environmental planning, nature based solutions and sustainable outlook could go a long way in positively affecting the city's biodiversity index, green urbanization as well as mental health and well-being of urban dwellers. The World Bank has emphasized cities and urban centresas the focus of the new Climate Change Action Plan 2021-2025 at par with energy, food, transport, production, and the likes. The plan targets to promote green, resilient, and inclusive development approach with poverty alleviation and shared benefits with an overall sustainable outlook.

Keywords: Climate resilience, sustainable development, urban ecosystem, urban green spaces, net zero carbon emission

Chapter 3

Green Accounting: A prerequisite for Sustainable Development in the context of Climate Change

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Abstract

The focus of all nations is now on "Green Economy" - raising the standard of living but with due consideration to resource use and environmental impact. On the other hand,Climate change has been posing the single most threat to human civilisation. The human civilisation is now vulnerable to the whims of nature-the climatic change vulnerability. The concentration of Green House gases (GHG) has increased due to different human activities over the years leading to increase in global mean surface temperature. The most typical problem of GHG gases is because of its features like it has a transboundary effect creating a negative externality which makes it an international problem and not a localised one. Additionally, it creates an intergenerational issue bearing the burden of it to future generations. Moreover, the formidable impact of nature usually causes widespread and unprecedented effects on the poorer section of the society and the most vulnerable in a disproportionate manner.

Key words: Sustainable development, environmental accounting, SEEA

CHAPTER 4

Sinking Cities and Rising Seas: Which way to go?

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Abstract

The most striking and tangible sign of climate change is the sea level rise phenomenon. The sea levels have risen about eight inches in the last century, the negative effects of which are enough to inundate the homes of the coastal communities. As per authentic sources, the global sea level was rising at a rate of 1.7 millimetres per year until 1993, which further rose to an average of 3.1 millimetres per year. This rate is expected to increase as global warming continues. The fate of our seas & humanity is intertwined. Yet, people seem to be determined to live unsustainably in low lying coastal areas. The consequence of coastal subsidence is manyfold. Mitigation strategies adopted worldwide, acts as a wave of hope that sea rejuvenation is still possible. The scientists, policymakers and the citizens are adopting new technologies to adapt to and survive the impacts of the changing climates. Green solutions, climate-smart engineering, and storm and sea-level rise proof settlements are coming up as alternative options for forced climate migration.

Keywords: Sea level rise (SLR), low lying cities, global warming, climate migration, mitigation, India

Chapter 5

Nano-mediated Climate Change: Impact on Higher Plants

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Abstract

Nanotechnology has opened an exciting future of scientific convergence and technological integration with the promise of broad social implications. Each sector of our daily life can get a revolutionary change with a single touch of Nanotechnology. However, the full potential of the applications of nanoparticles (NPs) has not yet been explored. Moreover, the indiscriminate use of varieties of nanoparticles in different industries generates a serious environmental issue in all living endeavors. Infiltrations of nanoparticles in the environment in recent times are creating various changes in our ecosystem which are directly faced by the silent receptors of our ecosystem, the plants.

In this article, the author aims to highlight the impact of some Engineered nanoparticles on higher plants with special emphasis on NP-mediated phytotoxicity which may create awareness among the farmers during the application of such tiny stuffs on agricultural sectors.

Keywords: Engineered nanoparticles, environment, phytotoxicity, uptake, accumulation

Introduction

Nowadays Engineered nanoparticles (ENPs) have received much attention due to their utility in many sectors such as consumer products, cosmetics,

Chapter 6

Trend Analysis of Temperature in Ganges Basin:1901-2020

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Abstract:

Temperature is one of the important independent variables, which regulate the atmospheric condition of a geographical space. The objective of the present paper is to detect the trend of change in temperature in the Ganges basinin the last 120 years by using the observed historical data and interactive web tool of the Climate Change Knowledge Portal (CCKP) ofthe World Bank Group. The variability of temperature may be reflected by the variation in precipitation in the Ganges basin, which may be found in the observed historical climatic database. Irregularity, as well as extremity, has been recorded in the temperature of the Ganges basin, which also put an impact on the precipitation characteristics. Not only the change in mean magnitude but also the magnitude in deviation from the mean has been observed for the recorded daily maximum and minimum temperature of the Ganges basin. The fluctuation of maximum daily temperature accelerates in the recent past (since 1990) and the minimum daily temperature becomes more stabilized.

Keywords: Spatial change, temporal variation, historical climate data

Chapter 7

Upsurge of Vector-borne viral diseases: A Co-relative study with climatic factors

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Abstract

Global warming and climate change have numerous effects on human health. They have indirect effects on infectious diseases. Depending on the location of specific countries and socioeconomical conditions, the effects on the rate of infectious diseases will be detected worldwide. Among infectious diseases, vector-borne viral diseases are among the four main categories (bacterial, disease, viral disease, fungal disease and protozoal disease) that are forecasted to be most affected. The effects on vector-borne infectious diseases like chikungunya, dengue fever, zika, and yellow fever are primarily due to the spread of arthropod vector infested areas and an increase in the number and blood-sucking activity of infected vectors. Global warming cannot be avoided for decades, even with the strongest mitigation events. Therefore, the application of adaptive measures to the effect of global warming is the most applicable action we can take. It is commonly accepted that the impacts of climate change on vectors and infectious viruses have not been apparent at this point yet in all parts of the world. Still, these impacts will appear in one

Chapter 8

Climate Change and its Impact on the Floral and Faunal Diversity of Different Ecosystems: A Review

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Abstract

Anthropogenic and natural factors are the main drivers of climate change. Detrimental human activities that have contributed substantially to climate change must include the emission of greenhouse gases due to the burning of fossil fuels, pollution, farming activities, land use change, etc. The impacts of climate change are manifolds such as average global temperature increase, the global sea level rise, thinning of glaciers, etc. Precipitation and temperature are two important aspects of climate variability that cause widespread influence across multiple scales of biodiversity including genes, species, communities, and various ecosystems. As compared to others, polar ecosystems are at high risk of climate change. However, the adaptive strategies of diverse organisms in different ecosystems render ample opportunities to acclimatize human-induced climate change.They will also help to curb the damage. Mitigation strategies provide reduction of greenhouse gases and augmentation of carbon sequestration by conscious human endeavour, even by utilizing local and indigenous knowledge and community participation in biodiversity and ecosystem functioning.

Chapter 9

Communicating Climate Change through Cartoon: An Analysis

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Abstract

Climate change is a worldwide phenomenon that has an influence on people from all walks of life. It is critical to keep things that have a negative impact on climate conditions under control. We are constantly bombarded with environmental messages, yet we have to attain the optimal degree of environmental awareness. For a long time, cartoons have been widely utilised as an instructional tool. They have made education more accessible and enjoyable for individuals. People have found boring things intriguing thanks to cartoons. Cartoons are becoming more popular as a technique of informing young people about climate-related issues. Cartoons are one-of-a-kind visual means of communication that allow for profound thought as well as a light giggle on current topics. Climate change and global warming are complicated issues, and cartoons assist to popularise them. This chapter discuss and tried to understand the role of cartoon in communicating and addressing the climate change issue.

Keywords: Climate change, cartoon, scientoon, environment communication.

Chapter 10

Effect of Climate Change and "2019 Amazon File Anomaly":with special reference to Brazilian Amazon Rain Forest- A Case-Study Report.

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Abstract

Climate change is extremely pertinent in the modern context of globalization and triggers issues regarding global warming - ranging from melting of ice in the polar region which contributes to the rising of sea level, or deforestation and fire in the Amazon. These events dominated global news and triggered questions regarding drivers of such anomalies. Amazon is the world's largest rainforest area, spanning a considerable biome of South America, whose major portion is expanded in Brazil and maintains environmental sustainability. But this area is being rapidly cleared by anthropogenic activities, such as agricultural use or cattle ranching, which is undoubtedly raising environmental concerns and leading to catastrophic effects such as climate change. The forest remnants are burnt which contributes to environmental pollution. The 2019 Amazon fire crisis is one event that dominated global news and led to a huge global

Structural control on polygonal impact crater rim geometry from Mare Crisium

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Abstract: Polygonal impact craters (PICs) with characteristic polygonal rim geometry are frequent on the surface of terrestrial planets and their respective natural satellites. Trends of their rim segments are considered to reflect the orientations of fractures/weak zones present in their vicinity. Mare Crisium (Fig.1) is a Nectarian-aged lunar basin (3.9 Ga) with a diameter of 740 km, present on the near side. Wrinkle ridges and polygonal impact craters, both simpleand complex, are widely present on this mare. It has been proposed that the 45° relation of simple PICs to weak structural planes does not hold everywhere, and the crater rim segments may show parallelism with fault strikes as both simple and complex PICs rims show similar trends [1]. In the case of Mare Crisium, we correlated the trends of 114 PICs (110 simple PICs;4 complex PICs) with wrinkle ridges using rose plots and frequency plots (Fig. 1). It has been observed that the dominant trend of wrinkle ridges is NE-SW (45^0-60^0) followed by NNW-NNE (330^0-345^0) and NW-SE (300^0-315^0, 315^0-330^0). Other trends include ~N-S (0^0-15^0, 345^0-0^0). Simple and complex PICs both show dominant trends in the NW-SE (315^0-330^0 for SPICs and 300^0-315^0 for CPICs) direction with subordinate orientation in the NE-SW (45^0-60^0) and ~N-S (0^0-15^0) direction. To ascertain if the trends of PIC rim segments and straight segments of tectonic structures (wrinkle ridges) had the same or different variabilities, F-tests with confidence levels of = 0.05, 0.025, and 0.01 were performed using the null hypothesis. The statistical correlations between simple and complex PICs with wrinkle ridges are accepted for all three confidence levels. It can be concluded that both simple and complex PICs align with the two dominant trends of the wrinkle ridges in Mare Crisium. Moreover, from the F-test, it can be ascertained that the wrinkle ridges possibly had control on the PIC rims' geometry, provided the null hypothesis for "the match of variation in trends of PIC rim segments (simple and complex separately) with the trends variation of straight segments of wrinkle ridges" is accepted. Further, geological and geophysical investigations are required to understand the extent of the control of such tectonic features on the rim orientation of polygonal impact craters.

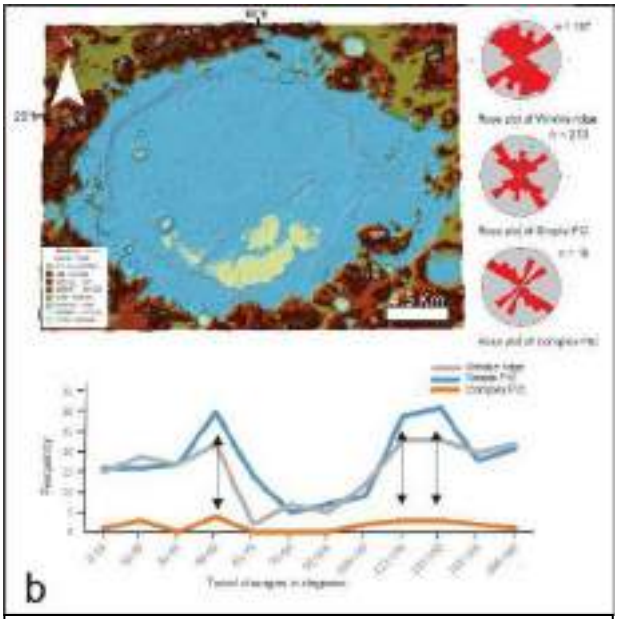

Figure 1: (a) Colored SLDEM of Mare Crisium with marked wrinkle ridges (dotted red lines); (b) Frequency plot of trend values (at 15° intervals) of deformational structures (wrinkle ridges here) and PICs' (simple and complex) rim segments from the Mare Crisium basin to understand the patterns and relationships among these features.

Acknowledgement: Research grant from SAC ISRO Ahmedabad is acknowledged.

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Temporal and Spatial relation of Pit crater chains with Rima Hyginus, the Moon

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Rima Hyginus, situated on the southeast of mare Vaporum, is a graben system with trails of rimless craters (pit craters), with an arcuate shape having small straight segments within it. It is a geomorphologically complex region on the surface of the Moon. The NNW-SSE and WNW-ESE trending rille/graben is 220 km long and cut by another graben namely, Rima Ariadeaus. This graben system is thought to have formed due to dyke propagation at some shallow sub-surface depth. The absolute lunar model age, estimated through Crater Size Frequency Distribution using the buffered crater counting (BCC) approach and Neukum et al. (2022) production function, of the Rima Hyginus and its pit crater chain are found to be 590 Ma and 130 Ma respectively. Hence, the pit craters are formed much later than the Rima Hyginus associated with bounding normal faults. At Rima Hyginus, pit craters are situated within the graben and are aligned with the dominant NNW-SSE orientation of the graben system. This relation and the younger age of the pit crater chain compared to the graben refutes the proposition that pit crater chains initiate graben formation. For 16 mapped pit craters, there is a linear correlation between the length of minor axes (crater width here) of these pits and their measured depth, with an R2 value of 0.89. This value reflects that faults are responsible for the formation of the pit crater chain. The studied pit crater chain possibly originated due to reactivation of the bounding faults of the Rima Hyginus.

Keywords: Rima Hyginus, Pit crater chain, Graben

Acknowledgement: A Chandrayaan-2 science plan project grant from Space Applications Centre, ISRO is acknowledged

COMPARATIVE MORPHO-TECTONIC ANALYSIS OF LUNAR WRINKLE RIDGES USING TMC-2 AND ANCILLARY DATA SETS. A. S. Arya1, J. Thapa2, A. Kundu2, D. Dasgupta2, Amitabh1 and R. Basu2, 1Space Applications Centre, Jodhpur Tekra, Ambawadi Vistar, Ahmedabad 380 015, India, e-mail: **arya_as@sac.isro.gov.in**; 2Department of Geology, Asutosh College, 92, S.P. Mukherjee Road, Kolkata 700 026, India, joyita.thapa112@gmail.com.

Introduction: Wrinkle ridge is a common contractional feature formed on the surfaces of terrestrial planets, originating due to a combination of folding and thrust faulting. It is visualized as the superposition of a broad arch and asymmetric ridges. They are present across the lunar mare regions/basins and possibly formed and evolved after the emplacement of the recent mare basalt units [1]. These ridges are typically attributed to the shifting from expansion to net contraction once the moon began cooling post-3.6 Ga, which caused the global stress field to shift from extensional to compressional. Using ISRO Chandrayaan-2 orbiter's Terrain Mapping Camera-2 (TMC-2) ortho-images, the Digital Elevation model from the Chandrayaan-2 mission and ancillary data sets, we attempted to conduct a comparative morpho-tectonic analysis of wrinkle ridges from multiple lunar basins in the near side and analyze their stress-strain conditions including their likely time of formation.

Methodology and results: Topographic profiles of wrinkle ridges were generated using ArcGIS software from TMC-2 DEM superimposed on LOLA DEM data. The initial and end lengths from each profile were calculated using the profile curves and the Moon coordinate system after the line-and-length cross-section balancing method. In the topographic profiles of the wrinkle ridges, the initial length is shown as the length of the curve line. We calculated these lengths using the mathematical formula for calculating distance, and the shortening of the surface across the wrinkle ridge along the section lines as being equal to the initial length minus the final length [2]. Ortho-images, DEMs from the Terrain Mapping Camera-2 (Chandrayaan-2 mission) and LROC WAC image were utilized to map and study the wrinkle ridges in three mare regions: Mare Frigoris, Mare Serenitatis, and Oceanus Procellarum. The eastern part of Mare Frigoris is dominated by interconnected groups of wrinkle ridges with a variety of orientations (circular, branching, and irregular patterns). A prominent E-W orientation can be seen in wrinkle ridges. The shortening values range from 0.67 to 1.5 (average 0.3%) for the Frigoris' wrinkle ridge (TMC-2 covered). It should be mentioned that the wrinkle ridges close to the Mare Frigoris' eastern border exhibit shortening values between upto 1.17 (on average 1%). The amount of overall shortening of wrinkle ridges in Mare Frigoris was up to 1.5% (Figure 1). Wrinkle ridge systems in Oceanus Procellarum that are covered by TMC-2 had a shortening of 0.78%-1.9%. The Posidonius crater, located at the northeastern edge of Mare Serenitatis, contains a 1 km long wrinkle ridge visible on the floor of sinuous rilles as observed from TMC-2 orthoimages. Shortening across this wrinkle ridge ranges between 1.25% and 2.5% (Figure 2).

Absolute model ages of the wrinkle ridges were calculated using the crater size frequency distribution (CSFD) approach in order to establish the relationship chronologically. We have used the buffered cratered counting (BCC) method for wrinkle ridges as it aids in establishing the age of linear/curvilinear structural features on the lunar surface. With the aid of the cratertools software in ESRI's ArcGIS, wrinkle ridges were mapped as polygons and the postdated craters that were present on them were marked as three-point circles. The absolute ages of the lunar surfaces were calculated by fitting the derived crater counting statistics with the known crater production function for the moon [3]. In the central part of eastern Mare Frigoris, wrinkle ridges together with those creating the rim of the ghost craters formed around 1.4 Ga, while the wrinkle ridges towards the eastern boundary formed around 3.4 Ga (Figure 3). The absolute model age of the examined wrinkle ridge in Oceanus Procellarum is estimated to be 1 Ga (Figure 3). The wrinkle ridge on the Posidonius sinuous rilles floor spans a total of 15 kilometres. We used the buffered crater counting approach using TMC-2 ortho-images to estimate the age of this wrinkle ridge to be between 45 and 60 Ma (Figure 3).

Empowering Women in Buddhist Tantra

Soumita Roy

Buddhism emerged as a pragmatic school where spiritualism, materialism and collectivism cohere successfully mediated. Nearly three thousand years ago Buddhism created a revolution in Indian society as well as in the religious history of India. Before the Vedic era, the Harappan period witnessed equality in society and family. In the pre-Buddhist era, women faced discrimination in social and political arenas because of the Upavedas and Upanishads. The Rig Vedic Brahmanical society's patriarchal structure trampled upon the rights of women. In the early phase of Buddhism, women were not allowed to join the Sangha. Only by the request of Ananda Buddha, female followers were allowed to join the Sangha. Rani Mahaprajapati Gautama was the first woman to join the Sangha. Even though they were allowed in the Sangha, they were ordered to follow the eight *garudhammas.*[1] It is clearly stated in the Bahudhatuka-sutta[2] that there

1. The eight heavy rules were said to have been added to allow more acceptance of a monastic Order for women, during the Buddha's time. They are controversial because they clearly put women in an inferior position.These are (1) A bhikkhuni who has been fully ordained even for more than a century must bow down, rise up from her seat, salute with hands palm-to-palm over her heart, and perform the duties of respect to a bhikkhu even if he has been fully ordained only a day. This rule is to be honored, respected, revered, venerated, never to be transgressed as long as she lives."..(2) A bhikkhuni must not spend the rains in a residence where there is no bhikkhu...(3) Every half-month a bhikkhuni should request two things from the Bhikkhu Sangha: she should ask for the date of the uposatha day and come for an exhortation... (4) At the end of the Rains-residence, a bhikkhuni should invite (criticism both from) the Bhikkhu Sangha and the Bhikkhuni Sangha on any of three grounds: what they have seen, what they have heard, what they have suspected...(5) A bhikkhuni who has broken any of the vows of respect must undergo penance for half a month under both Sanghas...(6) Only after a probationer has trained in the six precepts for two years should she request ordination from both Sanghas...(7) A bhikkhu must not in any way be insulted or reviled by a bhikkhuni...(8) From this day forward, the admonition of a bhikkhu by a bhikkhuni is forbidden, but the admonition of a bhikkhuni by a bhikkhu is not forbidden. This rule, too, is to be honored, respected, revered, venerated, never to be transgressed as long as she lives.

2 As it is said in the *To-sing king* (Bahudhātukasūtra) in regard to things possible and impossible:... ."It is impossible that a woman should be a noble cakravartin king" (aṭṭhānam etaṃ anavakāso

Charting their Own Path: Women as Agents of Change in Nineteenth and Twentieth Centuries

Subhasri Ghosh

Introduction:

Often denoted as the fairer sex/second sex/weaker sex, women in a traditional patriarchal set-up like that of India, are expected to play second fiddle and abide by the traditional diktat of being demure, docile and submissive. Men and women are not just socialised in different roles, their roles have a different social status too (Beauvoir, 2010). The difference in the role and responsibilities associated with that status make men and women "intended or unintended product(s) of a social practice" whereby women's work(s) and voices are devalued and their status is disadvantaged (Haslanger, 1995). Gender activism, in South Asian countries, has ranged from women's participation in social and political movements to promoting gender rights and socio-economic justice and abolishing discriminatory laws and irrational gender classifications. Women are trying to overcome gender stereotyping to realise their dreams, and also breaking the glass ceilings to tide over organised systems of vertical segregation in organisational setups within and across the nation-states in the region. This essay essentially tries to explore the question as to whether women of the sub-continent in the nineteenth and twentieth centuries, conformed to the social norms or whether they tried to break out of the mould to chart out a path of their own through organising resistance and movements to protest against issues afflicting their lives and that of the society in general.

Three Women: Three Voices

Paromita Chaudhuri

Sraboni Roy

In the 'Introduction' to *The Second Sex*, Simone de Beauvoir, one of the most influential feminist thinker-writers of the twentieth century, confessed her long hesitation about 'writing a book on woman' (De Beauvoir, 3). She further went on to observe that 'every concrete human being is always uniquely situated' (De Beauvoir, 2011: 4). Beauvoir's hesitation has dual implications: first, the complexities inherent in writing about the female of the human species, more specifically, 'woman', and second, that such a book might not be taken seriously enough by a predominantly male intelligentsia. But the woman's voice cannot be stifled, and across cultures, across communities, in her need to be heard, she has often chosen to be her own unique voice, instead of allowing the male to dub for her.

The three women we have chosen to focus on in this brief article, whose 'voices' we have chosen to hear – Rassundari Devi (1810-1899), Binodini Dasi (1862-1941), and Haimabati Sen (1866-1933) – were 'uniquely situated' at the crossroads of gender, history (socio-economic and cultural), and literature. Three women, who wrote not simply as writers, but as writers about their own lives, which leads us to consider some pertinent questions.

Women's writing in India has to be understood in the context of several issues, some of which have been sidestepped by academia. Susie Tharu and K. Lalita in *Women Writing in India* (Vol. I 600 BC to the Early

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Women who Dared to Dream: Challenging Gender Discrimination in Colonial Bengal

Sayani Mukhopadhyay

Introduction:

For the sustainable development of the world, gender equality and empowerment of women provides the foundation of a peaceful and prosperous society. The need for improvement of political, social, economic, and health status of women is extremely important for the overall growth of any country. For centuries women have been subjected to a life of being dominated and suppressed by the male-controlled society. There are varied types of violence and discriminatory practices against women all over the world and India is no different. Indian women have faced various discriminatory practices like 'Sati' the practice of dowry, Parda, female infanticide, burning and killing of wives, sexual violence and harassment at workplace, domestic violence, etc. Women empowerment not only highlights women's strength and skills to make them visible in the society but also emphasises the change in social outlook. The present paper aims to assess the contribution of women activists in Bengal and their noteworthy role in the spheres of education, society and Swadeshi movement, Tebhaga movement, etc

Historical Background:

The social and religious movement that took place in the late 19th-early 20th centuries in India had a long-lasting impact specifically in uplifting of the position of women, spread of education, and increased awareness the world towards social equality. This movement was an outcome of the conflict and interplay of British colonial rule with Indian culture-devoted norms and systems (Kopf, 1979; Mukherjee, 1982; Leonard, 1981). During the 19th century, religious superstitious, caste-

Feminist Challenge against Objectivity

Saswati De Mondal

Feminism is often considered to be a political agenda focused on women's issues. Sometimes it is taken to be a form of activism, without a clear picture of its own philosophical ambitions. Feminist thought is mostly seen not as an extension of the existing mainstream philosophy, in so far as women's issues as dealt by the feminists are neither commensurable nor translatable into the conventional philosophical literature. So, it is frequently perceived more as an ideology, than as a philosophy. The reasons for resistance of accepting the feminist thought in the mainstream philosophy may be varied, but one of the most significant one is that the virtues of rationality and objectivity which is considered to be the backbone of mainstream philosophy is replaced by virtues such as emotion, intuition and care in the feminist thought. In whatever way the feminist position be perceived, it is indubitable that it has brought a silent revolution in the arena of philosophical thinking in recent past. The present essay is designed to focus on the norm of objectivity as accepted by mainstream philosophy and the challenges that it faces from the feminist camp. In the endeavour to relook into the norm of objectivity, which has always received substantial importance in the traditional philosophical orientation the feminists bring forth several intricate questions and uneasiness that significantly add new perspectives to the issues involved. In course of this discussion the positions of two schools of feminism represented by Elisabeth Lloyd and Rae Langton are taken into consideration. The views of another prominent feminist, Sandra Harding regarding objectivity marks new perspective in this discussion.

It is held that the feminist thought owes allegiance to the logic of connectivity and the ethics of relationship which is not compatible with the dualist logic adhered to by mainstream philosophy. Besides

Women in Science: The Importance of Choice

Bidisha Maitra Sen

It matters little whether men or women have the more brains; all we women need to do to exert our proper influence is just to use all the brains we have.

- Florence Rena Sabin

Background

Women scientists: In Ancient and Middle Ages

Prior to the great civilisations of early Greece and Rome, women are known to have practiced medicine in ancient Egypt. Merit Ptah, who lived sometime around 2700–2500 BCE, is described on her tomb as "the chief physician." In ancient Greece, which came into existence sometime around the 8th century BCE, pondering the nature of reality and of health and disease became primarily male endeavours. But by the time the Roman Empire reached its dying days in the 4th century CE, a woman, Hypatia of Alexandria, had emerged as a symbol of learning and science. Hypatia, who lived from 370 to 415 CE, was a mathematician who rose to be the head of her city's Neoplatonist school of philosophy. In the 12th century the abbess Hildegard of Bingen (St. Hildegard) wrote books on the natural world and on the causes and cures of illness. Many other women worldwide were also practicing medicine and herbalism in their homes and communities at this time.

Women Scientists: From the Enlightenment to the 19th Century

Higher study in the early modern period was available only to those from enlightened and wealthy families. In 1667 Margaret Cavendish,

Eco-Entrepreneurship: Gender - Environment - Sustainability

Supatra Sen

The Global Scenario

The globally shared vision for sustainable development has a powerful gender perspective that emphasises gender equality and women empowerment. Since women have different formal and conventional rights over resource-allocation and decision-making, a gender-based approach is necessary to address the inequities.

Moser (1991) outlined three major roles of women in women-environment interaction

i. As caretakers of the environment

ii. As rehabilitators with respect to sustainable development

iii. As innovators in the making of new environments

Sustainable Development Goal 5 emphasises gender equality hailing it as crucial to sustainable development. Dankelman and Davidson (1988) opined that women are instrumental in managing their natural environment and adopt different strategies to deal with environmental crises. However, despite their efforts they continue to be victims of pollution – in all forms including human wastes, fumes, after effects of soil erosion and flooding.

International agreements targeting women and environment have been crucial. Convention on the Elimination of All Discrimination against Women held in 1979, an international 'Bill of Rights' for women concentrate on a number of environmental issues. Similarly, the Beijing Platform for Action, a product of the 4th World Conference on Women

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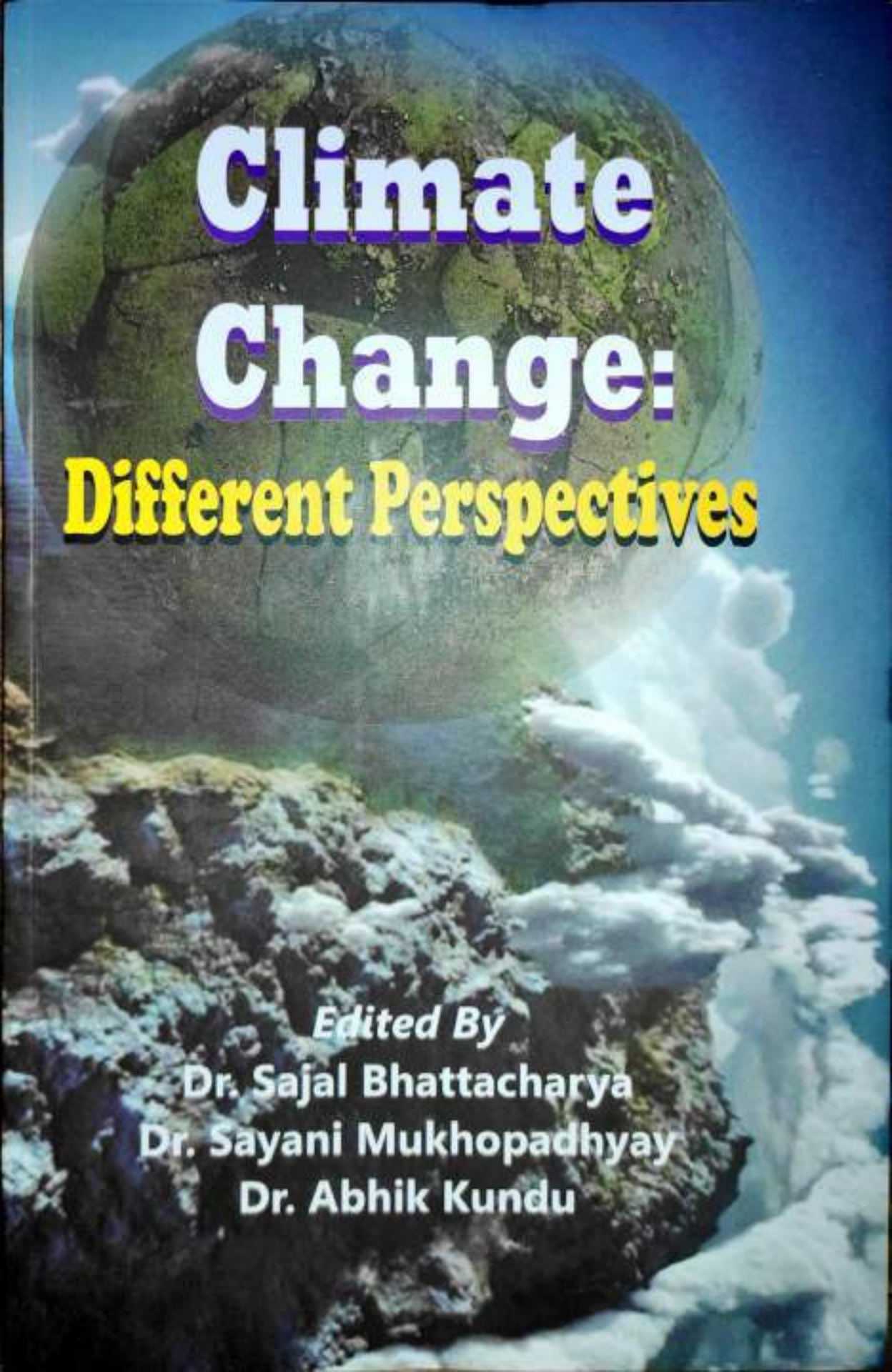
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