

# INTERNATIONAL SYMPOSIUM ON CYROSPHERE AND CLIMATE CHANGE (C<sup>3</sup>)

Manali, India  
2 - 4 April 2012

## PROGRAMME OF SESSIONS

(Any change in the programme will be posted outside the auditorium each day.)

**Venue: Siachen Auditorium** (for all sessions)

<b>01 April, 2012 (Sunday)</b>	
1000 onwards	Registration
	Visit SASE Cold Lab and model display set up

<b>02 April, 2012 (Monday)</b>			
0800-1000	Registration		
1000-1100	Inaugural Session		
1100-1200	Inauguration of Exhibition and High Tea		
<b>Plenary Session - 1 (Climate Change Studies in Cryospheric Region - I)</b>			
TIME FRAME	TITLE	AUTHORS	ABSTRACT ID
1200-1230	Lead Talk: Atmospheric Composition, Climate Processes and Climate Change	Venkatachalam R Ramaswamy, Director, NOAA/ Geophysical Fluid Dynamics Laboratory, USA	
1230-1245	Spatio-temporal variation of temperature and precipitation trends in Upper Karakoram Himalayas during last three decades and its effects on the geomorphology of the glacier valleys	Mahendra Bhutiyani, Piyush Joshi, Dinesh Kumar, P. Agarwal, K. Raja Sekhar, Chandra Shekhar	C045
1245-1300	Climatic Scenarios Generation for Satluj Basin using Statistical Downscaling Techniques	Manohar Arora	A002

1300-1315	The effects of El Nino and La Nina winters on snow and avalanche patterns in British Columbia, Canada	David McClung	D002
1315-1330	A sensitivity study on convective schemes toward model resolution and its implication for climate studies over western Himalayas	P Sinha, P.R. Tiwari, U.C. Mohanty, M.S. Shekhar, P.V.S. Raju	B009
<b>1330-1430</b>	<b>LUNCH</b>		
<b>Plenary Session - 2 (Climate Change Studies in Cryospheric Region - II)</b>			
<b>TIME FRAME</b>	<b>TITLE</b>	<b>AUTHORS</b>	<b>ABSTRACT ID</b>
1430-1500	Lead Talk: Climatology of precipitation over western and central Indian Himalayas	Ajit Tyagi, Ex-Director General, India Meteorological Department	
1500-1515	Relationship between Climate Indices and Winter Precipitation, Temperature over Northwest Himalaya	Dan Singh, Vikas Sharma, M.R. Bhutiyani	E001
1515-1530	Trends analysis of temperature in Beas Basin, western Himalayas	Laxmi Narayan Thakural, Sanjay K. Jain, R.D. Singh, S.K. Mishra	D027
1530-1545	Evaluation of Performance of NCEP Climate Forecast System for predicting Temperatures during winter season over India	Malasala Murali Nageswara Rao, U.C Mohanty	A025
1545-1600	Reconstruction of North Atlantic warm current using Dinoflagellate cysts: A case study from Ny-Alesund, Svalbard, Norway	Vartika Singh, Naresh C. Mehrotra, Rasik Ravindra, Dhruv Sen Singh	B010

1600-1630	TEA		
<b>Plenary Session - 3 (Climate Change Studies in Cryospheric Region - III)</b>			
TIME FRAME	TITLE	AUTHORS	ABSTRACT ID
1630-1700	Lead Talk: Improved Monitoring of Snow Depth and Assessment of the Climate Change	Sean Helfrich	D038
1700-1715	Impact of Climate Change in Spatial and Temporal Variability of Precipitation in Western Himalayan Region	Surendar Paul , O.P. Singh, Chandarshekhar Dagar, Manmohan Singh, Sonam Lotus	E002
1715-1730	Trend Analysis of climatic variables in Upper Brantas River Basin, Indonesia	Deepak Khare, Ari Setyorini, Santosh M. Pingale	C027
1730-1745	Analysis of temperature and snowfall trends of different observation stations in the cryosphere region of North-West Himalaya	Hemendra Singh Gusain, V.D. Mishra , M.R. Bhutiyani	D001
1745-1800	Variability of Diurnal Temperature Range over Western Himalaya in Climate Change Environment	M. Sudhanshu Shekhar, Sravana Kumar, Harish Chand, Dinesh Kumar, M.R. Bhutiyani, H.S. Thakur	D019
<b>1800-1830</b>	<b>BREAK</b>		
<b>1830-2000</b>	<b>CULTURAL EVENING</b>		
<b>2000</b>	<b>SYMPOSIUM DINNER</b>		
<b>03 April, 2012 (Tuesday)</b>			
<b>Plenary Session - 4 (Glacier Response to climate change - I)</b>			
TIME FRAME	TITLE	AUTHORS	ABSTRACT ID
0900-0930	Lead Talk	Prof David N Collins	

0930-0945	Ground survey based spatial response of glaciers of Himachal Pradesh to climate change	S.P. Shukla , Arun Chaturvedi	A010
0945-1000	Glacial variability in Hindu-Kush and Karakoram: Two sides of a coin, or two separate coins?	Umesh Haritashya, Michael Bishop , Jeffrey Kargel , Tim Neely	A005
1000-1015	Assessment of the Great Himalayan glaciers in Patsio region, India using satellite data and climatic observations	Harendra Negi, G. Saravanajohee, R. Rout, N.K. Thakur, Snehmani, M.R. Bhutiyani	A018
1015-1030	OSL dating of Tons valley moraines and post LGM glacial advances in Himalaya	Manish Mehta, D.P. Dobhal, Prdeep Srivastava, Deepak Srivastava, Bhanu Pratap	B004
1030-1045	Climatic response of debris covered glaciers	Argha Banerjee, R. Shankar	A012
1045-1100	Climate variability and glacier fluctuations for past five centuries over the western Himalaya, India: A Dendroclimatic approach	Hemant Bargaonkar	B005
<b>1100-1130</b>	<b>TEA</b>		
<b>Plenary Session - 5 (Glacier Response to climate change - II)</b>			
<b>TIME FRAME</b>	<b>TITLE</b>	<b>AUTHORS</b>	<b>ABSTRACT ID</b>
1130-1200	Lead Talk	Nathan Forsythe	
1200-1215	Fluctuations of a temperate mountain glacier in response to climate change	Edward Josberger, William Bidlake	A034
1215-1230	Recent changes and mass balance trend of Chorabari Glacier, Central Himalaya, India	D.P. Dobhal, Manish Mehta, Bhanu Pratap	A013
1230-1245	Flow Measurements and Modelling of the Satopanth Glacier	Argha Banerjee, Mahesh Choudhury, K. Praveen Kumar, H.C. Nainwal, B.D.S. Negi, Krishna Sajwan, R. Shankar	C006

1245-1300	Ice Dynamics and Flow Pattern of Dunagiri Glacier, Garhwal Himalaya	Deepak Srivastava, Bhanu Pratap, Siddharth Swaroop	C025
1300-1315	Instrumentation for Snow Parameters and Glacier Response Monitoring	Sudesh Kumar Mittal, Manjeet Singh	D017
1315-1330	Glacial response to environmental change in the Ravi basin, Himachal Pradesh	Pritam Chand, Milap Sharma	C041
<b>1330-1430</b>	<b>LUNCH</b>		
<b>Plenary Session - 6 (Climate change indicators)</b>			
<b>TIME FRAME</b>	<b>TITLE</b>	<b>AUTHORS</b>	<b>ABSTRACT ID</b>
1430-1500	Lead Talk: Changing pattern of large and extreme floods in the Indian sub-continent during the last century.	Vishwas S Kale	
1500-1515	SHARE Project: climate observations for environmental monitoring in the Himalayas	Bhupesh Adhikary, Elisa Vuillermoz, Roberta Toffolon, Paolo Cristofanelli, Angela Marinoni, Rocco Duchi, Paolo Bonasoni	D033
1515-1530	Dynamical downscaling approach for wintertime seasonal scale simulation over Western Himalayas	P.R. Tiwari, U.C. Mohanty, P. Sinha, M.M.N. Rao, M.S. Shekhar	B008
1530-1545	Climate change impact on Indian Middle Himalayan springs	Avinash Agarwal, Neeraj Kumar Bhatnagar, Rajesh Kumar Nema	C030
1545-1600	Preliminary Optical chronology of the Nubra valley glaciations Ladhakh, India and its implications towards past climate	Yogesh Nagar	B006
<b>1600-1630</b>	<b>TEA</b>		
<b>Plenary Session - 7 (Climate change monitoring)</b>			
<b>TIME FRAME</b>	<b>TITLE</b>	<b>AUTHORS</b>	<b>ABSTRACT ID</b>
1630-1700	Lead Talk	V K Raina	

1700-1715	Estimation of retreat of snout of Gangotri glacier using multi temporal remote sensing images	Rishitosh Kumar Sinha, Sanjay K. Jain, Rajeev Saran Ahluwalia	C005
1715-1730	Long term monitoring of sea ice concentration and extent in Antarctica using passive microwave remote sensing-SSM/I data	Kamal Singh, V.D. Mishra, Sahil Sood	C024
1730-1745	Water Level Changes in Lakes of Zaskar-Ladakh Range, North-West Himalayas, India, from ICESat Altimetry	Priyeshu Srivastava, Rakesh Bhambri, Prashant Kawishwar, D.P. Dobhal	D023
1745-1800	Changes in the Spiti basin 1972-2006 through remote sensing techniques	A Ramanathan	C036
1800-1815	Implications of Climate Change on Futuristic Stream flow of Jhelum River using Remote Sensing	Vaibhav Sharma, V.D. Mishra, N.K. Thakur	D013
1815-1830	Variability of Snow – Meteorological Parameters at Automatic Weather Stations in Western Himalaya	Sravan Kumar, M.S. Shekhar, Ajay Kumar, M.R. Bhutiyan	D025

#### **04 April, 2012 (Wednesday)**

#### **Plenary Session - 8 (Climate change monitoring)**

<b>TIME FRAME</b>	<b>TITLE</b>	<b>AUTHORS</b>	<b>ABSTRACT ID</b>
0900-0930	Lead Talk: Understanding glacier dynamics in Himalaya	Anil V Kulkarni	
0930-0945	A Spatial Interpolation Algorithm for Generation of Snow Depth Images from Discrete Data in Western Himalayas	Manoj K. Arora, S. Mangain, S. Tanga, P. Chordia, H.S. Gusain, V.D. Mishra	D007
0945-1000	Space Borne Microwave Remote Sensing of Snow or Remote Sensing of Snow Parameters using Space Borne Microwave Sensors	OPN Calla	D020
1000-1015	Development of a wireless seismic network for glacier and avalanche monitoring	Sridhar Anandkrishnan	D029

1015-1030	Glacier monitoring using Topographical map, DEM and Remote Sensing Data	Mustaq Ahmad Shaikh, Farjana Sikandar Birajdar, G. Venkataraman	D030
1030-1045	A DSS Framework for the Assessment of Water Resources under Climate Change Scenario	Deepak Khare, Prakash P. Katarki, Santosh M. Pingale	A024
1045-1100	Glacier Movement Estimation and Sensitivity Modelling using Multi Sensor Remote Sensing Data - A Case Study of Gangotri Glacier	Sneh Mani, Ashwagosha Ganju, Ankur Pandit, M.R. Bhutiyani, A.K. Nigam	D040
<b>1100-1130</b>	<b>TEA</b>		
<b>Plenary Session - 9 (Climate change adaption, Mitigation Strategies and Natural Hazards)</b>			
<b>TIME FRAME</b>	<b>TITLE</b>	<b>AUTHORS</b>	<b>ABSTRACT ID</b>
1130-1200	Lead Talk: Trinity of the Cryospheric Regions of the World	Nirmal Sinha	
1200-1215	Snow Harvesting an effective Practice for assured water supply in Cold Desert Region. - A Case Study in Kargil Area.	M. Santhana Subramani, Rachanna Bhatti, N.R. Bhagat	C008
1215-1230	About the need to mould Himalayan Glaciology in Cryospheric systems perspective	Renoj Thayyen	C009
1230-1245	Snow harvesting: A strategy to mitigate water scarcity challenges in snow bound regions due to Climate change	PS Negi	G006
1245-1300	High Resolution (Spatial & Temporal) Avalanche Hazard and Risk Assessment: A Climate Change Perspective	Amreek Singh, Novaline Jacob, J Srinivasulu, Rajesh Reddy, Anitha Kumari, Narendra K Thakur, Vijaya Jyothi, J Saibaba, Geeta Varadan, Ashwagosha Ganju	F009

1300-1315	Climate change related natural hazards as Perspectives from science, society and governance	Surya Parkash	F006
1315-1330	Snow, glaciers and natural hazards: observations, changes and circumstances in the last 10 years in Aosta Valley, NW Italian Alps	Massimo Broccolato, Michèle Curtaz, Paola Dellavedova, Valerio Segor, Marco Vagliasindi	C015
1330-1430	<b>LUNCH</b>		

<b>Poster Session - 1 (SHORT PRESENTATIONS)</b> <b>1430-1530 (2 minutes for each presentation)</b>			
<b>TIME FRAME</b>	<b>TITLE</b>	<b>AUTHORS</b>	<b>ABSTRACT ID</b>
	Determination of Failure Properties of Snow using FEM	Chaman Chandel, P. Mahajan, Praveen Srivastava	A001
	Deformation Induced Acoustic Emissions from snow under uni-axial loading and controlled temperature environment	J.C. Kapil, Prem Datt, Ashwani Kumar, Karamjeet Singh , Vinod Kumar , P.K. Satywali	A003
	Monitoring of Seasonal Snow Cover in Sikkim Himalaya	Smriti Basnett, Anil V. Kulkarni	A004
	A Temperature Index based model for estimation of snowpack layer hardness	Jagdish Chandra Joshi	A014
	Prediction of weather states using Hidden Markov model	Jagdish Chandra Joshi, M.R. Bhutiyani	A015
	Evaluation of ASTER GDEM for North West Himalayan Terrain	Pratima Pandey, G. Venkataraman	A016
	Hydroclimatic changes and possible linkages with the large-scale circulation in the eastern India	Dileep Panda, Ashwani Kumar	A019



	Hydroclimatic changes and possible linkages with the large-scale circulation in the eastern India	Dileep Panda, Ashwani Kumar	A019
	Variability of diurnal precipitation during Winter over Western and Central Himalaya as simulated by a Regional Climate Model	M. Sudhanshu Shekhar, M. Sravana Kumar, Sanjeev Kumar, Jai Krishan, M.R. Bhutiayani	A020
	Monitoring Glacier retreat and its impact on the Climate	Prashant Kumar, S.K. Mittal, Bhuvnesh Bansal	A021
	Precipitation patterns in the karakoram range (northern Pakistan) from observations and model simulations	Elisa Palazzi, Antonello Provenzale, Jost Von Hardenber, Elisa Vuillermoz, Gian Pietro Verza, Bhupesh Adhikary, Paolo Cristofanelli, Paolo Bonasoni	A023
	Study of radiative and turbulent energy fluxes of Antarctic ice sheet close to ice free area in Dronning Maud Land, East Antarctica	Hemendra Singh Gusain, V D Mishra, Avinash Negi	C001
	Snow and glacier melt runoff estimation in Baspa basin using remote sensing and GIS technology	Rakesh Kaur Rana, Anil. V. Kulkarni, B.S. Chaudhary,	C002
	Characteristics of Hydro-meteorological Parameters over Chorabari Glacier, Central Himalaya	Amit Kumar, D.P. Dobhal, Manish Mehta	C003
	Snowmelt runoff modeling in Beas basin for Snow/Glacial melt contribution at Manali and Bhunter, Himachal Pradesh	Sanjay Jain, Rajeev Saran Ahluwalia, L.N. Thakural, R.D. Singh	C004
	Hollow Catch Dam Structures for Avalanche Retardation and Snow Harvesting	Rakesh Aggarwal, Mithlesh Sahu, Arun Chaudhary, Amod Kumar	C012
	Isotopic and Major Ion Composition of the Seasonal Himalayan Snow: Implication for the Moisture Sources and Short Term Climate Change	Yogesh Nagar	C016
	Acoustics Emission Signal from Snow and its Wavelet Transform	Karmjeet Singh, Y.C. Nagar	C017
	Depleting Seasonal Snow Cover over Northwest Himalaya in India	Dan Singh, Amreek Singh, M.R. Bhutiayani	C019

	Performance of snow fence in Himalayan region	Ganesh Kumar, Sarfaraj Nazir, Rohit Bhushan	C020
	Spatial variable response of Himalayan glaciers in Karakoram and Great Himalayan Ranges	Harendra Negi, N.K. Thakur, Snehmani, Mahendra Bhutiyani, Naresh Thakur	C026
	Spatiotemporal Temperature Reconstruction Reliability and Change Detection	Anand Verdhen, Ashwagosh Ganju, M.R. Bhutiyani, B.R. Chahar	C028
	Spatial variability of glacial-fluvial interaction in the western Himalaya	L. Sardine Varay, Vikrant Jain	C029
	Characterization of subglacial pathways draining two tributary meltwater streams through the lower ablation zone of Gangotri Glacier, Garhwal Himalaya, India	A Ramanathan	C033
	Temporal and seasonal variation in the discharge in Chhota Shigri stream waters Lahaul-Spiti valley, Himachal Pradesh	A Ramanathan	C034
	Glacio-Morphological Studies through field observations: a case study of Chhota Shigri Glacier, Himachal Pradesh, India	A Ramanathan	C035
	Estimation of snow physical parameter by utilizing multi-temporal high-resolution, TerraSAR-X satellite imagery - A case study of Manali Area	Snehmani	C038
	Application of SAR data for Snow Physical Parameter Estimation	Sanjeev Kumar, Snehmani, Ankur Pandit	C039
	The Behaviour of Snow under the Effect of Overburden Pressure and Shear Loading	Chaman Chandel, P. Mahajan, P.K. Srivastava, Vinod Kumar	C040
	Scaling Issues in Correlating Ground Based and Satellite based Observations	Farjana Sikandar Birajdar, P. Narvekar, Gopinadh Rongali, Snehmani, G. Venkataraman	C042

	Winter precipitation pattern in Pir-Panjal and Greater Himalayan Ranges of Western Himalaya during last two decades	Rajeshwar Dogra, Amreek Singh, M.R. Bhutiyani	C044
<b>Poster Session - 2 (SHORT PRESENTATIONS)</b> <b>1530-1615 (2 minutes for each presentation)</b>			
<b>TIME FRAME</b>	<b>TITLE</b>	<b>AUTHORS</b>	<b>ABSTRACT ID</b>
	A Comparative Study of Models for Estimation of Snow Cover Reflectance from MODIS Data in Manali Region	Manoj K. Arora, N.K. Gupta , K. Mitkari , V.D. Mishra, H.S. Gusain	D006
	Streamflow Simulation in Jhelum River Basin, India using Remote Sensing	Vaibhav Sharma, V.D. Mishra, N.K. Thakur	D009
	Real Time Snow and Meteorological Data Collection in the Western Himalayas Using Radio based Remote Telemetry System Networks	Ramanand Chauhan, R.K. Das, R.K. Garg, N. Sharma	D012
	Cryospheric Variation over North-West Himalayas and Jhelum Basin	V.D. Mishra, Vaibhav Sharma, N.K. Thakur	D014
	Design of an Unmanned Tracked Vehicle for Snow Research Applications	Rajiv Kumar Das, Agraj Upadhyay, Dayanand Kumar, Sachitanand Malewar	D016
	Design of an Instrument for Measurement of Snowpack Layer Settlement	Mandeep Kaur, Moiz Chasmai, Rajiv Kumar Das, Rajesh Kumar Garg	D018
	Design of Ground Based Passive Microwave Radiometer Operating at Frequency 6.93 GHz	O.P.N. Calla, Amit Kumar	D021
	Design of Multipurpose Instrumented Avalanche Rod	Ganesh Kumar, Moiz Chasmai, Ashwagosha Ganju, Amod Kumar	D028
	Study of temporal variability of the Siachin glacier in upper Himalaya over the last decade using optical satellite data	Chander Shekhar, S.K. Dewali, Satish Kumar, Snehmani, M.R. Bhutiyani	D031
	Snow wetness and snow density retrieval using space based synthetic aperture radar data	Praveen K. Thakur	D037

	Air-borne GPR investigation for snow and glacier study in North West Himalaya	Kamal Singh, H.S. Negi, Ashwagoshia Ganju, V. Sharma, J.C. Kapil, R.K. Garg, J. Kansal, S. Kumar, R. Chauhan	D039
	Earthquake disaster management in Himalayan region, Indian scenario - remarks on a strategy	Pramendra Dev, Rajesh Kumar Varma, Vartika Singh	E003
	Numerical simulation of Leh Cloudburst event on 05th August, 2010 using WRF mesoscale model	Sravan Kumar, M.S. Shekhar, Piyush Joshi, M.R. Bhutiyani, H.S. Thakur	F001
	2-D Computational Fluid Dynamics Model of Avalanche Flow Interaction with an Obstacle for Snow Chute at Dhundhi	Rakesh Aggarwal, Amod Kumar	F002
	Impact of Satellite Data Assimilation in predicting precipitation over Western Himalaya using WRF model	Piyush Joshi, M. Sravana Kumar, M.S. Shekhar, M.R. Bhutiyani	F003
	Precipitation forecast over Western Himalaya using pixel value information from Kalpana satellite	Piyush Joshi, S.K. Dewali, M.R. Bhutiyani	F004
	A GIS-Based Avalanche Hazard Zonation using Minimum Release Area: A New Approach	Sanjay Dewali	F005
	Seismogenic Avalanches in Siachen region, NW Himalaya, India: A case study	Rajinder Parshad	F007
	Numerical Simulation of Snowdrift for Deposited Snow Around Snowdrift Control Structures	Ganesh Kumar	G003
	Urban based Planning and Designing of Rooftop Rainwater Harvesting considering Climate Change: A Case study of Bhubaneswar, India	Deepak Khare, P.K. Nayak, P.K. Mishra	G004

**1615-1730**

**Tea & Posters**

<b>1730-1830: Panel Discussion and Valedictory Function</b>
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<b>05 April, 2012 (Thursday)</b>
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<b>0900-1700</b>	<b>Symposium Study Tour</b>
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