

The 8th Meeting of the CEOS Working Group on Capacity Building & Data Democracy (WGCapD-8)

-----Minutes-----

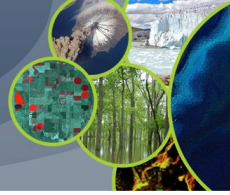
Date: March 06-09 2019

Location: Indian Institute of Remote Sensing (IIRS), Dehradun, India

Hosted by: Indian Space Research Organisation

Following members were present (In-person & virtual) during the 8th annual meeting of WGCapD held during March 06-09, 2019 at Dehradun, India.

S. No.	IN-Person		S. No.	Virtual	
1	Prakash Chauhan	ISRO	21	Steven Hosford	CEOS
2	Raj Kumar	ISRO	22	Robert Eckardt	Jena
3	PVN Rao	ISRO	23	Francesco Sarti	ESA
4	Nancy Searby	NASA	24	Michael Bock	DLR
5	Lauren Childs	NASA	25	Sergio Camacho	CRECTEALC
6	S.P. Aggarwal	ISRO	26	Alessandra Gomes	INPE
7	Arpit Chouksey	ISRO	27	Linda Tomasini	CNES
8	Harish Karanatak	ISRO	28	Le Xuan Huy	VNSC
9	Shefali Agrawal	ISRO	29	Suchith Anand	GODAN
10	Arijit Roy	ISRO	30	Betzy Hernandez	NASA
11	Krishna Vadrevu	NASA	31	Zipho Tyoda	DST
12	Rajeev Jaiswal	ISRO	32	Lu Veeck	Vlab
13	Pau A Rosen	NASA	33	Joost Teuben	ITC
14	Sophie Hebden	UK NCEO	34	Argie Kavvada	NASA
15	A Senthil Kumar	ISRO	35	Mirko Albani	ESA
16	S K Srivastav	ISRO	36	Brian Killough	CEOS
17	PLN Raju	ISRO	37	Simona Zoffoli	ASI
18	S S Ray	ISRO			
19	D Dhar	ISRO			
20	G S Rao	ISRO			



Meeting Summary

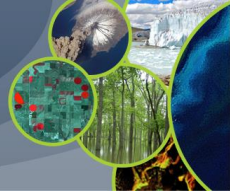
The 8th annual CEOS Working Group for Capacity Building and Data Democracy Meeting (WGCapD-8) was hosted by ISRO on March 6 – 9, 2019 at Indian Institute of Remote Sensing (IIRS), Dehradun. Twenty participants from ISRO, NASA and UK NCEO attended in person. An additional 17 participants from CEOS CEO, CEOS, CRECTEALC, ESA, GODAN, NASA, VLab, ITC, ASI, DST, VNESC, INPE and DLR attended virtually. The full participant list is shown in the last page.

Following an overview of activities of Indian Institute of Remote Sensing (IIRS) and ISROs activities in Earth Observation space segment and applications for societal benefits for agriculture, fisheries, water resources and weather forecasting, the first day focused on lessons learnt from WGCapD activities from 2018, plan for 2019, overview of CEOS, global activities of WGCapD, capacity building for advance sensors e.g. SAR and Hyperspectral. Status of the MOOCs on SAR and LULC, proposed webinars on hyperspectral data analysis, disasters and LULC were discussed. The group then discussed impacts to planned WGCapD activities in 2019 – 2021. The last session was devoted for 11 flash agency talks focusing on tools, technologies and best practices for CB. Key points from day discussions emerged about i) agencies support for targeting school children engagement in the future CB activities, ii) Currently WGCapD is supporting AfriGEO and AmeriGEO, participations of regional space agencies and their contribution is necessary. For this local space agencies should join the organization committees and share training facilities to cut costs, iii) A need was felt that agencies to provide feedback, perspectives, and requirements of that region's needs in terms of gap areas in applications, technical abilities, etc. This will help in design the training modules for different regions and iv) Reaching out to the other WGs/VCs to see if they have any future CB requirements for their projects to design future WGCapD workplan.

The second day focused on support to GEO regional initiatives, capacity building infrastructure development and Collaboration with other CEOS WGs, VCs and AHTs & GEO, SDGs, and thematic areas. Updates about AOGEOSS, AfriGEOSS, and AmeriGEOSS were provided by experts from these initiatives. Detailed discussions were held for CB infrastructure development plan for training resources information dissemination and about implementation of WGCapD training calendar. Session on Collaboration with other CEOS WGs, VCs and AHTs & GEO brought out important aspects to understand the CB requirements of these groups. A special visit to ISRO/IIRS distance learning center was organized and participants could interact with students at remote places in Indian universities.

The third day meeting was associated with a field trip to nearby hill station of Mussoorie and discussions focused on concluding discussions of the work plan, the updated Terms of Reference, and participation in upcoming meetings and events. A highlight was a special presentation from ISRO about the leadership initiatives as CEOS chair for the year 2020. The third day of meetings were held in a place where all could appreciate the lush, verdant beauty of this Himalayan region of India.

The details of meeting highlights the main points from the meeting and the planned actions are listed below.



Day-1

Agenda 1: Welcome, Opening Remarks and General Overview of IIRS activities (Prakash Chauhan)

Dr. Prakash Chauhan Chair WGCapD and Director IIRS, Dehradun welcomed the all participants briefed about the courses, education training, research projects, and outreach activities of IIRS. He has also presented the capacity building capabilities of ISRO as whole including international training programmes viz. ITEC, ASEAN, CSSTEAP and others.

Agenda 2: Earth Observation Program of ISRO (G S Rao)

Dr. G S Rao presented about the EO programmes of ISRO and its goals. He also discussed about the various domains of different EO thematic application activities. He has mentioned about the national database and institutionalisation at different spatial scale and thematic disciplines viz. agriculture, ground water, irrigation, solar energy, environmental monitoring with ISRO's future missions.

Agenda 03 – Satellite Meteorology & Ocean Applications & MOSDAC (Raj Kumar)

Dr. Raj Kumar from ISRO has presented the application of EO Systems in weather prediction, ocean and coastal application, solar energy potential and agriculture crop monitoring. He emphasized the use of EO data for applications in societal benefit to the country.

Agenda 04 – Operational EO Applications & Bhuvan Initiative (PNV Rao)

Dr. PNV Rao explained about the ISRO's vision and strategy for RS applications for sustainable development, alongwith the Disaster risk reduction, geospatial governance, land resources mapping and agricultural dynamics studies, watershed development programmes, geological applications, near real time flood inundation mapping, etc.

Agenda 05 - Tour de Table & Meeting Strategy & Adoption of the Agenda

Formal introduction was made by all the delegates come to the meeting.

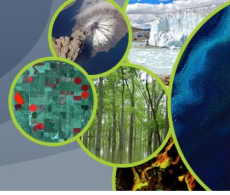
Agenda 06 – Discussion on Lessons learned from WGCapD 2018 deliverables & plan for 2019 (Nancy Searby)

Nancy Searby, Vice Chair WGCapD presented about the 2018 deliverables and lessons learned including the need of improvement in outreach activities and funding support. She emphasized about the 2019 deliverables including regional and global activities. She also mentioned about the need of collaboration with other AHT's to promote the use of EO's for SDG's.

Agenda 07 – Overview of CEOS & SIT and WGCapD Role (Steven Hosford)

Steven Hosford presented the overview of CEOS activities, its annual cycle, institutional relationships, Organisation structure, summary of 2018 achievements, etc. The main objectives of CEOS and governing documents, 2019-2021 Work Plan, Terms of Reference, Strategic Guidance, Governance and Processes were discussed. He emphasized on the evolutions relevant to WGCapD role and activities.

Agenda 08 – EO College MOOCS on SAR (Robert Eckhardt)



Robert Eckhart briefed about the MOOC activities pertaining to multiple languages, concepts of radar, echoes in space, radar polarimetry (PolSAR mini-MOOC). He suggested that smaller tutorial videos will have more potential to achieve learning outcomes.

Agenda 09 – MOOC on LULC (Francesco Sarti)

Francesco Sarti presented about the background and main objectives of MOOCs, content and timeline. He mentioned that MOOCs started from 2015 and till date 5 have been completed. The overview of MOOC runs have been explained as 1 general run, then series of 4 re-runs (focused on specific applications – e.g. land cover, forests, ag, disasters, wetlands, etc.) --- one for SDGs, one for Land applications in Africa.

Action: MOOC to be completed on scheduled date (Amalia Gomez/ Francesco Sarti)

Agenda 10 – Hyperspectral Remote Sensing & Applications: Webinar (Shefali Agrawal)

Ms Shefali presented about the objectives of upcoming webinar on Hyperspectral RS and its applications, Schedule: Oct-Dec 2019 (Nov 4th-Dec 2nd 2019, 1300 UTC, every Monday, 90 minutes long using GoToMeeting platform). She mentioned that 5 different themes will be covered as 1) hyperspectral general overview, 2) info extraction from hyperspectral data & processing algorithms, 3) vegetation studies, 4) geological applications and 5) water resources.

Action: Webinar to be completed on scheduled date (Shefali Agrawal)

Agenda 11 – Geospatial technology for Disaster Risk Reduction: Webinar (Arijit Roy)

Dr. Arijit Roy presented about the webinar on Disaster Management. He briefed about the feedback on 2015 webinar on disaster risk reduction and Outline of upcoming webinar was explained as - 1) Introduction (CEOS, WGCapD), 2) disaster risk reduction, 3) space-based platforms, 4) Geospatial tech for monitoring, 5) vulnerability monitoring/early warning, and 6) monitoring and early warning systems. It was advised to have more focus on few themes so that webinars can be completed in time.

Action: Webinar to be completed on scheduled date (Arijit Roy)

Agenda 12 – LCLUC Webinars (Krishna Vadrevu)

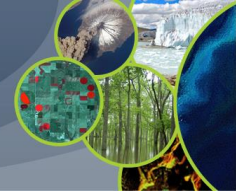
Dr. Krishna Vadrevu presented about the LCLUC webinars. He briefed about the NASA LCLUC program, international & regional linkages. The goal and priorities of SARI have been discussed along with the ongoing SARI projects. He presented the details on Thailand and Malaysia trainings. Both the activities will be WGCapD activities and are on schedule.

Agenda 13 – International Collaboration for EO Data Sharing of ISRO (Rajeev Jaiswal)

Dr. Rajeev from ISRO Hq. presented about the international collaborations of ISRO for EO data sharing initiatives. He mentioned that total 225 agreements with 51 countries and 5 multinational bodies have been done by ISRO. Joint projects are also in place to enhance the data quality through joint cal-val activities. Several joint satellite missions are also going on viz. NISAR, SARAL, YOUTHSAAT, TRISHNA, etc.

Agenda 15 – NASA & ISRO SAR (NISAR) & CB Support (Paul Rosen)

Dr. Paul presented about the NASA-ISRO joint mission called NISAR and associated CB development efforts. He mentioned about the NISAR Mission Science User's Handbook. Four science themes are going to be the major focus of NISAR mission i.e. ice dynamics, ecosystems



and biomass change, solid earth deformation, and coastal processes. He briefed about the NISAR CB approaches and proposed applications.

Agenda 16 – Indian SAR Missions & CB Support (Raj Kumar)

Dr. Raj Kumar presented about the Indian SAR missions and associated CB support. He briefed about various ISRO's microwave satellite suite: radiometers, scatterometer, airborne SAR, and space SAR and applications themes. He focused on CB activities of ISRO including TREES Program (Training & Research in Earth-Eco Systems), SMART Research Program, VEDAS-Visualization of Earth Data and Archival System and MIDAS-Microwave Data Analysis Software.

Agenda 17 – CB Support to Hyperspectral Remote Sensing (Michael Bock)

Mr. Bock presented about the CB activities pertaining to hyperspectral RS and its applications in mineral exploration, soil mineralogy, texture, vegetation, crop residue, hazardous materials identification, coastal water etc. He explained the technology in detail and CB activities such as creating an online learning platform (HYPEREDU), MOOC modules, Application Tutorials EnMAP-Box 3: toolbox for visualization, processing & analysis of EnMAP data.

Agenda 18 - Agency Overview talks

18.1 ESA (Francesco Sarti)

Francesco presented about the CB activities of ESA which includes past training activities and planned symposium school lab in 2019, advanced training courses in ESA and European states. He also mentioned about the international collaborative activities for CB approaches.

18.2 UK NCEO (Sophie Hebden)

Miss Sophie briefed about the technologies, tools, methods for CB in UK including project-specific training activities. She discussed about the emerging technologies like DataLabs, JASMIN infrastructure, MOOCs.

18.3 CRECTEALC (Sergio Camacho)

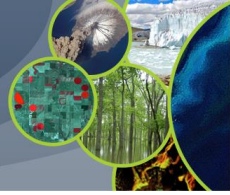
Mr. Sergio presented about the technology, tools, and CB approach in CRECTALC. He focused on classroom training courses for recent graduates and practitioners, one-week workshops and training courses and projects (ex. Use of EO for flooding/drought in watersheds in Mexico) and post training surveys. Looking for cooperation in organizing a workshop on EO for disaster risk reduction in July 2019 and data cube.

18.4 DLR (Michael Bock)

Michael explained about the capacity building resources viz. SAREDU, EO-college, SARbian, etc. and project based Capacity Building activities of DLR's EOC, Paraguay SULU project, Costa Rica Moneo Project. He also discussed about the TerraSAR /TanDEM-X data sets.

18.5 INPE (Alessandra Gomes)

Miss Alessandra briefed about the INPE activities for CB initiatives and its perspectives. She mentioned about the In-person Trainings that target teachers from basic education, 35 people & SELPER trainings: target general public relating to Geotech, 20 people, in-person and Capacitree Project: technicians from other countries, 24-40 people. She focused on specific themes and outputs.



18.6 ISRO (Prakash Chauhan)

Dr. Prakash presented about the CB activities of ISRO which includes different target groups, outcomes, practices & measures for effective CB, collaborations. He emphasized on new initiatives of ISRO such as UNNATI program, new capacity building program office at ISRO Hq and host of other activities at various ISRO centers such as IIRS, SAC and NRSC.

18.7 NASA (Nancy Searby)

Dr Nancy highlighted about the CB initiatives taken by NASA. She showed the statistics of training conducted and institutions contacted. She also mentioned about the training methods and support to regional activities including the best practices adopted at NASA.

18.8 CNES (Linda Tomasini)

Miss Linda presented the CB activities of CNES which included CB objectives, the 2018 achievements, and support to VNESC along with the 2019 CB planned activities. LULC in Haiti – trainees were GIS experts from Haiti CNIGS, themes urban monitoring, forest mapping, coastline monitoring, use of QGIS etc.

18.9 VNESC (LeXuan Huy)

Dr. Huy presented the objectives and target participants for CB activities in Vietnam. Mention of topics including rice monitoring, forest monitoring, flood and subsidence were focused.

18.10 GODAN (Suchith Anand)

Dr. Suchith presented Open Data and Capacity development for Zero Hunger Aim which includes the example of open data Capacity building tool and Open tools and resources for capacity development.

18.11 SANSA (Daniel Matsapola)

Mr. Daniel briefed about the SANSA CB activities, approaches and achievements. He mentioned that all training programs are user-driven, post-training follow up with trainees, continuous support and engagement of stake holders are some of the best practices adopted by SANSA.

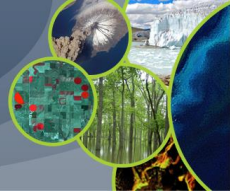
Agenda 19 – Summary and Discussion on Day 1: Key Points

Following points emerged as the summary of the day.

- Agencies should also target school children engagement in the future CB activities.
- Currently WCapD is supporting AfriGEO and AmeriGEO, participations of regional space agencies and their contribution is necessary. For this local space agencies should join the organization committees and share training facilities to cut costs.
- A need was felt that agencies to provide feedback, perspectives, and requirements of that region's needs in terms of gap areas in applications, technical abilities, etc. This will help in design the training modules for different regions.
- Reaching out to the other WGs/VGs to see if they have any future CB requirements for their projects to design future WCapD workplan.

Day-2

Agenda 20 – Regional Hands-on training in LCLUC in AOGEO region: Thailand & Malaysia (Krishna Vadrevu)



Dr. Krishna briefed about the 3 day meetings on LCLUC as part of regional hands-on trainings in AOGEOS Region at Thailand and Malaysia. He mentioned that funding and support to these activities has been arranged through NASA, JAXA and local agencies. He also invited ISRO to contribute to support these meetings.

Agenda 21 – Update on SAR, EO & Disaster Trainings in Vietnam (LeXuan Huy)

Dr Huy explained about the SAR, EO & Disaster trainings conducted through WGcapD in Vietnam. He briefed about the objectives, deliverables, and expected outcomes of the training. The training includes about 40 young researchers from different institutions of Vietnam.

Agenda 22 – CB Support to AmeriGEO Week in Peru (Betzy Hernandez)

Mr. Betzy presented the AmeriGEO initiative for CB support. He introduced AmeriGEO and explained the linkages with CEOS-WgCapD. Focus for AmriGEO week will be on 4 SDGs: Agriculture, Water, Disasters, and Biodiversity. He also discussed about 2019 planned CB activities.

Agenda 23 – CB Support to Asia & Pacific and UN Role (Senthil Kumar)

Dr. A. Senthil Kumar presented the Capacity Building Support extended to Asia-Pacific and UN-SDGs. He briefed about CSSTEAP CB activities, coordinated CB and proposed webinars on SDGs.

Agenda 24 – CB Support to AfriGEO Symposium (Zipho Tyoda)

Mr. Zipho presented AfriGEOSS-Capacity Building and Data initiatives in which he explained EO activities for complex issues of the continent, AfriGEOSS initiatives for SDGs and action areas, data infrastructure & resources.

Agenda 25 – CB Initiatives under ITEC Program (SK Srivastav)

Dr. Srivastav presented the CB initiative under ITEC (India Technical & Economic Cooperation) program which include 161 partner countries in Asia & the Pacific, Africa, Latin America, the Caribbean, East Europe. IIRS Dehradun conducts two courses every years for ITEC participants. He explained about the objectives of the course, target participants, learning outcomes, implementation process and partners.

Agenda 28 – Link WGCapD Jointly-offered Training & Agency Training Sites (Prakash Chauhan/Harish Karnataka)

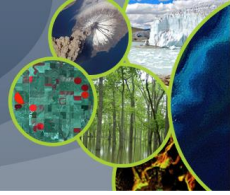
Dr. Harish presented the need of linkages and sharing information between different space agencies for capacity building activities. Different training programmes were listed on EO by different space agencies. It was proposed to have an integrated web portal as a common platform to get the information about the training programs offered by different space agencies.

Sergio mentioned that it is similar to knowledge portal of UNSPIDER. Perhaps there could be a knowledge exchange, methods could be taken from them, etc. Krishna mentioned that the goal is ambitious, meaningful but complex to achieve. Nancy emphasized on limiting the objectives of the proposal and plan for a simple portal providing the listing of various resources.

(Action : Prakash Chauhan/Harish Karnatak, IIRS

Dehradun)

Agenda 29 – Training Resources Collection: Example of EO College (Robert Eckardt)



Mr. Robert presented about the role of EO College in CB activities. He focused on the need of Empowering mobile learning without heavy IT infrastructure, which is good for developing world. He stressed on Adaptive learning strategies and platforms for the needs of the individual user.

Agenda 30 - Implementation of WGCapD Training Calendar (Lauren Childs)

Miss Lauren presented about the implementation of WGCapD training calendar. She discussed current training announcement process, overview and benefits of implementation of training calendar.

Agenda 31 – CB Infrastructure Development in Northeast India (PLN Raju)

Mr. Raju presented about the CB infrastructure in Northeast India in which he explained about the complexity of the region, end users of the CB activities of NESAC, outreach, academic linkages, and various EO application projects. NESAC offers WGCapD for the support on initiatives in RS, geo-information, UAV RS, meteorology and sat communication.

Agenda-34 The GEO Capacity development strategy (Joost Tuben)

Dr Tuben presented an update of GEO capacity development and emphasized that Focus lies on supporting GEO Flagships and Initiatives in developing and implementing CD interventions, applying a holistic view (going beyond individual training) and the concept of co-creation. Tools, methods and best practices will be developed and shared among the GEO community.

Agenda 35 – Examples of co-design for capacity development (Sophie Hebden)

Miss Sophie briefed about the PRISE (Pest Risk Information System) which is EO-based crop pest risk info system making use of Climate models combining EO data to model pest risk in the future. WESCAL antenna, HyCRISTAL – future climate for Africa project – NERC: driven by East African priorities, HyCristal aims to develop a new understanding of EA climate variability and change, their impacts.

Agenda 36 – CB on SDGs: Brief of Webinar & Future Directions (Argie Kavvada)

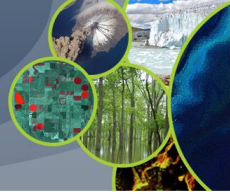
Miss Argie presented the outcome of SDGs awareness webinar done in December 2018. She described number of target participants and feedback process. She stressed upon engaging with broader CEOS and sustainable development community to increase the number of individuals & institutions benefiting from SDG trainings (e.g., SDG Academy).

Agenda 37 – Indian Support to GEOGLAM Activities (SS Ray)

Dr. Ray explained about the Indian support to GEOGLAM activities. He briefed about the GEOGLAM activities and objectives. He mentioned 3 core components and 3 cross-cutting components: 1. Global/regional monitoring systems, 2. National monitoring systems, 3. Monitoring countries at risk and Crop Monitor (AMIS) – monthly market monitoring activities, for four major crops – rice, wheat, maize, and soybean. He emphasized on the Indian National crop monitoring system. International workshops and CB activities of GEOGLAM and MNCFC, New Delhi.

Agenda 38 – Synergy with WGISS, FDA and SEO (Mirko Albani)

Mr. Albani presented Synergy with WGISS, Future Data Architectures (FDA) and System Engineering Office (SEO). He mentioned about the scope of WGISS, future data access and



analysis architectures. He focused on the demand of Jupyter notebooks, web-based GUI and COVE Training Webinar.

Agenda 39 – ISRO Data Cube Initiatives for Regional CB (D Dhar)

Dr. Dhar presented ISRO Data Cube Initiatives for Regional CB which includes the vision, design, developments, architecture, prototype development and program linkages.

Agenda 40 – Synergy with CEOS-WG Disasters (Simona Zoffoli)

Dr. Zoffoli presented synergy with CEOS WGDisaster. She mentioned about the shared CEOS deliverable CB-29 (DRR), LEO-GEO Initiative – SAR data added to weather service GEO-LEO products to improve flood monitoring and recovery response. Capacity building needs were discussed while rolling out concepts leading to operational projects.

Agenda 41 – Indian Support to SAARC Region for Disaster Support (G S Rao)

Dr. GS Rao explained about the Indian Support to SAARC Region for Disaster Management. He showcased Indian DMS programme done by ISRO for different ministries and database creation for emergency management. He also briefed about the disaster response services extended in the past events viz. tsunami, cyclone, landslide, flood, drought, forest fire, etc.

Day-3

Agenda 44 – CEOS: India Chair Transition discussions

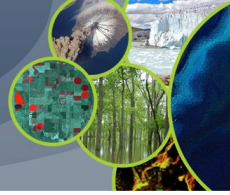
ISRO will take over CEOS Chair in 2020. It was discussed that new Chair will continue the priorities and initiatives identified by chairs for the year 2018 and 2019. ISRO suggested that as Chair new initiatives such as Climate & Carbon monitoring, Agriculture, Disasters, Water and developing a real constellation for climate observation with other CEOS agencies will be taken up. Dr. Rajkumar emphasized on identification of one theme like disasters for SAARC countries. The final priorities for the work plan will be finalized in consultation with the SIT chair CSIRO and Troika.

Miss Nancy highlighted that CEOS wants to be more explicitly connected to the GEO work plan. Interesting to see what the other agencies say about a real constellation – this is the important point for CEOS yet hard to achieve. It was suggested to take some time to organize and coordinate till CEOS plenary, so that priorities are set out in better manner.

Dr. Prakash further elaborated the need of a focused approach for real constellation concept. Specific parameters (ex. precipitation) should be selected so that it is task-oriented to show progress at the end of the year. Dr. Prakash would like to see an initiative on enhancing the CB in this region – for data cubes, disasters, etc. as ISRO Chair initiatives.

CEOS should have a longer-term work plan (5-10 yrs), annual priority changes are too quick. Example: SDGs are longer term. Dr. Raj Kumar further added that each year the work plan changes under new chair.

Agenda 45 – CEOS Plenary 2019 Discussion



It was discussed that some deliverables have been completed; Vietnam training, SDG trainings, LCLUC trainings, webinars were also completed since the last plenary. WGCapD leadership now should focus for the identification of work elements for year 2020 and funding support to take up training activities. In the next two years there should be CB for NISAR ahead of its launch. Krishna also emphasized on funding issue and suggested that before the funding issue is resolved, we can explore some possibilities within current networks.

Agenda 46 – Discussion WGCapD Linkages with CEOS WGs and VCs

- **Climate:**

Essential Climate Variables (ECV) from space is an active discussion topic among space agencies. Discussion were focused on how WGCapD can contribute to build awareness about the ECVs and associated error budget. WGCapD would need the right person to communicate with WGClimate. Dr. Prakash further added that different level products are needed for different communities. What are the best practices needed for different instruments? Sophie explained on the issue of funding that some partnerships with Future Earth in an academic context have seed funds from different partnerships that work on SDG issues.

Dr. Prakash discussed that modelers want to know the uncertainties with each satellite product. Should we provide awareness for how to use different climate products from space, strengths/weaknesses? Could this be part of the discussion? Ex. Ocean color has a lot of documentation on the products in the metadata. How can we take the products to the modeling community?

- **CalVal:**

Krishna took the lead and discussed that there is a land cover group which provides protocols for validating land cover products. Land Product Validation Sub-Group – meets often to discuss the processes. Dr. Paul stated that JPL led the SAR cal/val group and focuses on calibration targets, common sites around the world. Currently WGCapD has limited role to play with the WGCalVal. Krishna mentioned that now there is a need to educate with more webinars about the steps needed to address validation of space based products.

- **WGISS:**

Vice Chair Nancy stressed that WGCapD should have continued connection with WGISS. Need a liaison to this and other groups. Someone should take the lead in this.

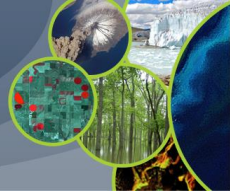
Action: find a liaison for WGISS from WGCapD (Nancy)

- **Disasters:**

Dr. Prakash appraise the connection with WG Disaster. Dr. Senthil mentioned that Connection to AO region through SERVIR relating to disasters could be focused.

Agenda 48 – Actions indications & Wrap-Up

WGCapD Chair Dr Prakash Chauhan thanked all the attendees for their contribution to make the 8th WGCapD meeting a grand success.



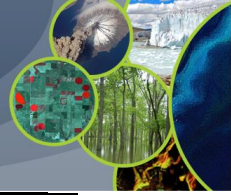
WGCapD 8th Annual Meeting
March 06-09, 2019

Agenda

March 6th - Day 1 Location: 3rd Floor, CSSTEAP Building, IIRS Dehradun, India

(All timings in IST; + 530 UTC) (v) = virtual

About ISRO & Capacity Building			
0	09:00-09:30	Registration	All
1	09:30-09:45	Welcome, Opening Remarks and General Overview of IIRS activities	Prakash Chauhan, IIRS/ISRO & Chair WGCapD
2	09:45-10:00	Earth Observation Program of ISRO	P. G. Diwakar, ISRO
3	10:00-10:15	Satellite Meteorology & Ocean Applications & MOSDAC	Raj Kumar, SAC/ISRO
4	10:15-10:30	Operational EO Applications & Bhuvan Initiative	P V N Rao, NRSC/ISRO
10:30-10:35		Group Picture	
10:35-11:00		Tea/Coffee Break	
General Business			
5	11:00-11:15	Tour de Table & Meeting Strategy & Adoption of the Agenda	Prakash Chauhan, ISRO Nancy Searby, NASA & All
6	11:15-11:45	Discussion on Lessons learned from WGCapD 2018 deliverables & plan for 2019	Nancy Searby, NASA & All
7	11:45-12:00	Overview of CEOS & SIT and WGCapD role	Steven Hosford, CEOS, CEO (v)
Global Activities: Massive Online open courses (MOOCs) & Webinars			
8	12:00-12:30	EO College MOOCs on SAR	Robert Eckardt, Univ. of Jena
9	12:30-12:45	MOOC on Land Use and Land Cover changes	Amalia Gomez, ESA (v)
10	12:30-12:45	Webinars: Hyperspectral Remote sensing & Applications	Shefali Agrawal, IIRS
11	12:45-13:00	Webinars: Disaster Management	Arijit Roy, IIRS
13:00-14:00		Lunch	
12	14:00-14:30	LCLUC Webinars	Krishna Vadrevu, NASA
13	14:30-14:45	International Collaboration for EO Data Sharing from ISRO	Rajeev Jaiswal, ISRO
14	14:45-15:00	Discussions and Question and Answers on Global activities	All
CB for Advance Sensors – SAR & Hyperspectral Session			
15	15:00-15:15	NASA & ISRO SAR (NISAR) & CB support	Paul Rosen (NASA-JPL)
16	15:15-15:30	Indian SAR Missions & CB Support	Raj Kumar, ISRO/SAC
17	15:30-15:45	CB Support to Hyperspectral Remote Sensing	Michael Bock, DLR
15:45-16:00		Tea/Coffee Break	
Agency Flash Talks About Technology, Tools & Methods (5 slides only, format to be provided) & Agency Update on CB			
18	16:00-17:00	Agencies Highlights – 5 minutes each agency related to CB Activities – Technology, Tools & Methods	
		1. ESA – Amalia Gomez & Francesco Sarti (v)	2. UK NCEO – Sophie Hebden
		3. CRECTEALC – Sergio Camacho (v)	4. DLR – Michael Bock
		5. INPE – Alessandra Gomes (v)	6. ISRO – Prakash Chauhan
		7. NASA – Nancy Searby	8. CNES – Linda Tomasini (v)
		9. VNSC – Le Xuan Huy (v)	10. GODAN - Suchith Anand (v)



		11. SANSA – Daniel Matsapola	
Summary of the Day			
19	17:00-17:30	Summary of the Day and Discussions	
		Adjourn	
19:00 Onwards: Hosted Dinner by Director IIRS & Chair WGCapD, Dehradun			

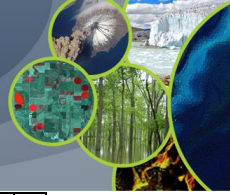
March 7th - Day 2

Location: 3rd Floor, CSSTEAP Building, IIRS Dehradun, India

Regional Activities for AOGEOs, AfriGEO & AmeriGEO Regions			
20	09:30-09:45	Regional Hands-on training in LCLUC in AOGEO region: Thailand & Malaysia	Krishna Vadrevu, NASA
21	09:45-10:00	Update on SAR, EO & Disaster Trainings in Vietnam	Le Xuan Huy, VNSC (v)
22	10:00-10:15	CB Support to AmeriGEO Week in Peru	Betzy Hernandez, NASA (v)
23	10:15-10:30	CB Support to Asia and the Pacific and UN-SDGs	Senthil Kumar, CSSTEP
24	10:30-10:45	CB Support to AfriGEO Symposium	Zipho Tyoda, DST (v)
	10:45-11:00	Tea/Coffee Break	
25	11:00-11:15	CB Initiatives Under ITEC Program	S K Srivastav, IIRS
26	11:15-11:30	VLab Activities for Regional CB	Lu Veeck, WMO-CGMS VLab (v)
27	11:30-11:45	Discussions & Questions & Answers	
Capacity Building Infrastructure Development			
28	11:45-12:00	Link WGCapD Jointly-offered Training & Agency Training Sites	Prakash Chauhan, ISRO
29	12:00-12:15	Training Resources Collection: Example of EO College	Robert Eckardt, Univ. Of Jena
30	12:15-12:30	Implementation of WGCapD Training Calendar	Lauren Childs, NASA
31	12:30-12:45	CB Infrastructure Development on Northeast India	PLN Raju, NESAC
32	12:45-13:00	Discussions & Questions & Answers	
	13:00-14:00	Lunch	
33	14:00-15:15	Visit to Distance Learning Program (DLP) Studio of IIRS, Dehradun & Other facilities	
	15:15-15:30	Coffee Break	
Looking for Synergies: Collaboration with other CEOS WGs, VCs and AHTs & GEO			
34	15:30-15:45	GEO Capacity development strategy	Joost Teuben, ITC (v)
35	15:45-16:00	Examples of co-design for capacity development	Sophie Hebden, UK NCEO
36	16:00-16:15	CB on SDGs: Brief of Webinar & Future Directions	Argie Kavada, NASA (v)
37	16:15-16:30	Indian Support to GEOGLAM Activities	SS Ray, MNCFC/MOA
38	16:30-16:45	Synergy with WGISS, FDA and SEO	Mirko Albani, ESA & Brian Killough, CEOS (v)
39	16:45-17:00	ISRO Data Cube Initiatives for Regional CB	D Dhar, SAC/ISRO
40	17:00-17:15	Synergy with CEOS-WG Disasters	Simona Zoffoli, ASI & David Green, NASA (v)
41	17:15-17:30	Indian Support to SARRAC Region for Disaster Support	Shantanu Bhatawdekar, ISRO
42	17:30-17:45	Discussions & Questions & Answers	
Summary of the Day			
43	17:45-18:00	Summary of the Day	
		Adjourn	

March 8th - Day 3 – Field Trip and Meeting Wrap-Up

Field Trip: Mussoorie Hills (proposed) ~ 30 Km from Dehradun			
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	09:00	Departure from Hotel/Guest House after breakfast		
	09:00-10:15	Arrival at Hotel JP Manor		
	10:15-11:15	Explore the place and nature trail		
	11:15-12:00	Refresh & Side Discussions		
44	1200-12:30	CEOS – India Chair Transition discussions	Raj Kumar and CEOS Team ISRO	
	12:30-14:00	Lunch		
45	14:00-14:30	CEOS – Plenary 2019 Discussions	All	
46	14:30-15:30	Discussion WGCapD Linkages with CEOS WGs and VCs	Prakash Chauhan, ISRO Nancy Searby, NASA & All	
Meeting Outcomes				
47	15:30-16:00	Review for WGCapD Activities for 2019 & Discussion	Prakash Chauhan, ISRO Nancy Searby, NASA	
48	16:00-16:20	Actions indications & Wrap-Up		
		Tea /Coffee		
	16:45	Depart to Dehradun		
	18:00	Arrival at Dehradun		