

DAY 1 – Wednesday 9 September 2020 (14:00 CET)

14:00

Opening and Welcome

Maurice Borgeaud, Head of Department EOP-S

14:10

Presentation

ESA's role in providing evidence of a changing climate, including CCI's achievements

Josef Aschbacher, Director EOP

14.30

News and update on implementation for CCI+

Susanne Mecklenburg, Head of ESA Climate Office EOP-SC

5 min BREAK

14:45

Session 1: CCI's contribution to international climate initiatives

Organiser: Susanne Mecklenburg, Head of ESA Climate Office EOP-SC

Moderator: Sophie Hebden, Research Coordinator for Earth Observations

Panel discussion

- Briefings per topics below will be distributed prior to meeting
- Brief presentation (5-10 min) by each panel member
- Q&A

Briefings available before meeting on

- WCRP's New Strategy and Implementation: opportunities for a follow-on ESA Climate Change Initiative
Detlef Stammer (Michel Rixen), WCRP
- Joint CEOS-CGMS Working Group on Climate – Role and Activities
Joerg Schulz, CEOS/CGMS WGClimate
- Towards a GEO strategy on EO and climate action
Sara Venturini, GEO
- IPCC – how can you contribute?
Myles Allen, Oxford University

Seed questions

- How can ESA CCI contribute
 - to the new WCRP strategy and its implementation

<p>10 min BREAK</p>	<ul style="list-style-type: none"> ▪ to the GCOS revised implementation plan ▪ to the CEOS/CGMS WG Climate activities ○ Should ESA CCI contribute as a programme collectively to IPCC Assessment Reports? ○ What new data can CCI provide to achieve SDG and climate resilience and adaptation activities?
<p>15:40</p>	<p>Session 2: Cross-ECV – from current to future activities, lessons learned and setting priorities for future activities Organiser: Annett Bartsch, Science Lead b.geos Darren Ghent, Science Lead University of Leicester Moderator: Clement Albergel, Technical Officer ESA Craig Donlon, Technical Officer ESA</p> <p>Presentations</p> <p>New science questions identified by IPCC AR 6 Richard Jones, UK Met Office</p> <p>Towards cross-ECV activities in the revised GCOS implementation plan - what are the main open questions, Han Dolman, GCOS</p> <p>Earth system science: Future Earth's interdisciplinary research projects and networks, Wendy Broadgate, Future Earth</p>
<p>5 min BREAK</p> <p>16:45</p>	<p>Breakout session (attendees to sign up in advance to their preferred session)</p> <p>Interactions on</p> <ul style="list-style-type: none"> • 2a Land-atmosphere (Facilitators: Wouter Dorigo, Science Lead TUWIEN, Elizabeth Good, Climate Research Group representative Metoffice, Clement Albergel, Technical Officer ESA) • 2b Ocean-atmosphere (Facilitators: Chris Merchant, Science Lead University of Reading, Jacqueline Boutin, Science Lead UMPC, Paolo Cipollini, Technical Officer ESA) • 2c Cryosphere-atmosphere (Facilitators: Andrew Shepherd, Science Lead University of Leeds, Thomas Lavergne, Science Lead MetNo, Anna Maria Trofaier, Technical Officer ESA) • 2d Land-ocean (Facilitators: Shubha Sathyendranath, Science Lead PML, Jean-François Cretau, Science

<p>5 min BREAK</p> <p>17:35</p> <p>18:15</p>	<p>Lead LEGOS, Jerome Benveniste, Technical Officer (ESA)</p> <p>Seed questions</p> <ul style="list-style-type: none"> ○ How to further combine individual ECVs in a more system focussed approach? ○ Which cross-ECV do we want to support but need further input, both in terms of existing ECVs' contribution and new ECVs? ○ How could we in future put ECVs into clusters? ○ How could projects facilitate benefits for society e.g. provisions around scaling/regional challenges faced by potential operational users? <p>Feedback from Breakout Session <i>Annett Bartsch, Science Lead b.geos</i></p> <p>End of DAY 1</p>
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DAY 2 – Thursday 10 September 2020 (10:00 CET)

<p>10:00</p> <p>10:50</p>	<p>Session 3: Earth Observation for UNFCCC Paris Agreement <i>Organisers: Michael Buchwitz, Science Lead University of Bremen & Michaela Hegglin, Science Lead University of Reading</i></p> <p>Presentations</p> <p>Introduction to the session Michael Buchwitz</p> <p>Global Stocktake – how does it work? Florin Vladu, UNFCCC</p> <p>CO₂ Human Emissions project Gianpaolo Balsamo, ECMWF</p> <p>What can EO do for the UNFCCC Paris Agreement? Michaela Hegglin, University of Reading</p> <p>Breakout Session <u>Overall Objective:</u> Brainstorming and identification of case studies on how EO can support the implementation of the Paris Agreement.</p>
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	<ul style="list-style-type: none"> • 3a breakout: Atmospheric monitoring for quantifying GHG emissions. e.g. atmospheric retrievals of CO₂, CH₄, halocarbon, NO₂, CO, etc, and inverse modelling to derive sources and sinks (i.e. top-down) • 3b breakout: Assessing GHG stocks, sources and sinks from observations of the terrestrial C-cycle. e.g. EO-based monitoring of AFOLU, wetlands, etc, and land surface modelling to estimate emissions (i.e. bottom-up/land) • 3c breakout: Understanding the role of the oceans and polar regions as GHG sources and sink. e.g. ocean circulation impact on the C sink; ocean biological carbon pump; permafrost emissions of CH₄, etc (i.e. bottom-up/oceans and ice) • 3d breakout: Use of EO in building resilience and adapting to climate change. e.g. monitoring/understanding heatwaves, wildfires, and droughts; desertification; flooding; sea-level rise; sea state extreme/surge events, etc. <p>Seed questions</p> <ul style="list-style-type: none"> ○ Identify case studies based on existing work that illustrate how EO can already support the Paris agreement. ○ Are there R&D case studies that may in the next 5-10 years lead to new types of actionable information supporting Paris Agreement goals? ○ How can the CCI community contribute to the first Global Stocktake in 2023? (i.e., ideas for projects in CCI+ Phase 2)
11:40	Coffee break
12:00	Feedback from Breakout Session <i>Michaela Hegglin, Science Lead University of Reading</i>
12:55	End of Session 3
10 min BREAK	
13:05	Paul Fisher Chair/moderator Briefings on <ul style="list-style-type: none"> • Knowledge Exchange, Paul Fisher, Communication Manager ESA, Sophie Hebden, Research Coordinator for Earth Observations ESA • How to use the DIAS service for CCI, Albrecht Schmidt, ESA

<p>14:00</p> <p>15:00</p>	<ul style="list-style-type: none"> Heritage Space – availability of data for CCI, Mirko Albani, ESA <p>Poster session: Paul Fisher Chair/moderator Highlights from individual ECV projects in preparation for the Mid Term Review meeting</p> <p>End of DAY 2</p>
<p>DAY 3 – Friday 11 September 2020 (10:00 CET)</p>	
<p>10:00</p> <p>10:10</p> <p>10:25</p> <p>10:40</p> <p>5 min BREAK</p> <p>11:00</p>	<p>Session 4: AI Contribution to Climate Data and Modelling Organiser: Ulrika Willen, Project Team Scientist, Carsten Brockmann, Science Lead Brockmann Consult, Alison Waterfall, Project Team Scientist CEDA Moderator: Ed Pechorro, Data Engineer ESA, Marcus Engdahl, Technical Officer ESA</p> <p>AI for Climate Modelling Peter Düben, ECMWF</p> <p>AI activities relevant for Climate in ESA's Phi-Lab Pierre Philippe Mathieu ESA</p> <p>CCI & AI Carsten Brockmann, Brockmann Consult</p> <p>Breakout session (4 x parallel groups) Attendees to sign up in advance to their preferred group. Identified science challenges & feasibility of potential AI solutions -</p> <ul style="list-style-type: none"> Group #1 (Facilitator: Carsten Brockmann, Science Lead Brockmann Consult) # Explainable AI on CCI ECVs # Intelligent Gap Filling for CCI ECVs Group #2 (Facilitator: Ulrika Willén, Project Team Scientist) # Teleconnections Applying CCI ECV Parameter(s) # Attributing Extreme Weather Events to Climate Change via CCI ECVs Group #3 (Facilitator: TBC)

	<p># Connecting Atmospheric CCI ECVs to Ground Phenomena</p> <p># Cloud Masking for CCI ECVs</p> <ul style="list-style-type: none"> • Group #4 (Facilitator: Alison Waterfall, Project Team Scientist, CEDA) <p># Predicting Changes in Water Cycle Via CCI ECVs</p> <p># Inferring Precipitation via CCI ECVs</p>
11:40	<p>Feedback from Breakout Session <i>Carsten Brockmann, Science Lead Brockmann Consult</i></p>
10 min BREAK	
12:30	<p>Session 5: Collaboration between CCI and C3S <i>Organiser: Thomas Popp, Science Lead DLR, Frank Paul, Science Lead University of Zurich</i> <i>Moderator: Frank Paul</i></p> <p>Presentations</p> <p>Collaboration between CCI and C3S</p> <ul style="list-style-type: none"> • On common R&D interests, Carlo Buontempo, ECMWF, Susanne Mecklenburg, ESA • On data standard and interoperability, Ed Pechorro, ESA, Andre Obregon, ECMWF <p>Plenary discussion - Anna Maria Trofaier</p>
13:00	<p>Seed questions</p> <ul style="list-style-type: none"> • What R&D activities are needed to support C3S operational CDR production? • Which ECVs should CCI prepare for future use by C3S? • How can we improve interoperability and efficiency in the CCI-C3S collaboration?
14:00	<p>End of Session 5 Chair: Thomas Popp</p>
LUNCH BREAK	
15:00	<p>Session 6: Evolution of CCI into phase 2 and beyond to a new ESA Climate programme - the views of the Science Leaders <i>Organiser: Darren Ghent, Science Lead University of Leicester</i> <i>Moderator: Science Leads (TBC)</i></p>

16:15	Summary and closing remarks Susanne Mecklenburg, Head of ESA Climate Office EOP-SC
16:30	End of Meeting