Climate Change Initiative
CCI Collocation #4

Phase 2 Implementation and Beyond

Mark Doherty
Pascal Lecomte

Frascati– February 6th, 2014
Introduction

- Objective of the CCI
- CCI Context
- CCI Implementation => Phase 1
- Phase 1 results
- CCI evolution Phase 2
- Conclusion
Objectives of the CCI

Realise the full potential of the long-term global EO archives that ESA, together with its Member states, has established over the last thirty years...

... as a significant and timely contribution to the ECV databases required by the United Nations Framework Convention on Climate Change
THE SECOND REPORT ON THE ADEQUACY OF THE GLOBAL OBSERVING SYSTEMS FOR CLIMATE IN SUPPORT OF THE UNFCCC

EXECUTIVE SUMMARY

April 2003

GCOS – 82 (ES)

(WMO/TD No. 1143)
**ESA Ministerial Council, Nov 2008:**
Approval of 75.5 M€ for a six year programme that will contribute to about twenty satellite-based ECVs. A strong interaction with the scientific community is an essential part of the programme. (Funding since increased to 95 MEuro)

The CCI initiative will ensure that ESA can play a full role in deriving relevant ECVs specified by GCOS, based on ESA current and archived EO data. ESA will work with CEOS agencies to ensure as complete a coverage of the entire suite of ECVs as possible.
## CCI Master Schedule

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### Inception

- Prioritise ECV
- PB-EO Implementation

### Phase 1

- Scientific User Consultation
- Algorithm Specification Delivery

### Phase 2

- Scientific User Consultation
- Major System Development
- Assimilation / Assessment

- ECV Delivery

### Mid Term Review

- Collocation Meetings
  - #1
  - #2
  - #3
- LPS

### CMUG Meetings

- #1
- #2
- #3
- #4
- #5
- #6

CCI Results of Phase 1

- **9 CCI projects have been completed**
  - Data are available via the CCI Web site (www.esa-cci.org)
  - Climate Assessment Reports are being produced

- **1 CCI project (Fire) still to be completed**
  - Mostly due to System Engineering aspects
  - Phase 2 of this project will be started with the last three projects

- **CMUG is completing his phase 1 activities end of March 2014**

- **3 CCI projects (which started in January 2012) are on schedule**
CCI Products Time Coverage

- Cloud
- Ozone
- Aerosol
- GHG
- Sea Ice
- Sea Level
- SST
- Ocean Colour
- Glaciers: 2-3 measurements per glaciers over the period
- Ice Sheet
- Land Cover
- Fire
- Soil Moisture

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Dates indicate periods of data availability and coverage.
Where ESA data is cited in IPCC WGI AR5: highlights

Chapter 2: Observations: Atmosphere and Surface
• The (A)ATSR series of sea surface temperature measurements (the ARC data set) has improved understanding of uncertainties and biases in SST records.

Chapter 4: Observations: Cryosphere
• The cryosphere provides some of the most visible signatures of climate change. 20 years of ESA altimetry measurements have helped record the decline in Arctic sea ice thickness and volume.
• Cryosat-2 is beginning to have an impact, providing more accurate measurements of Artic sea ice at higher latitudes.
• Altimetry and SAR data from ERS-1, ERS-2 and Envisat have been vital in measuring changes in ice sheets.
• The ESA/NASA Ice sheet Mass Balance Intercomparison Exercise (IMBIE) provided a reconciled estimate of ice sheet mass balance changes from the satellite community.

Chapter 13: Sea Level Change
• Altimeters on ERS-1, ERS-2 and Envisat not only provide a key role in measuring changes sea level but also the contributions to sea level change from ice sheets and glaciers.
Results from the CCI are cited in AR5, notably:

- **CCI Glaciers** played a leading role in creating the first globally-complete glacier inventory, the Randolph Glacier Inventory.

- **CCI Sea Level** produced improved Global Mean Sea Level estimates using Envisat data.

- The **Ice sheets Mass Balance Intercomparison Exercise**, involving **CCI Ice Sheets**, has led to improved confidence in the measurement of ice sheet mass balance and the associated global sea level contribution.

Further CCI projects are also cited in the report:

- **Glaciers_cci**
  - Observations: Cryosphere
  - Sea Level Change

- **Greenhouse_Gases_cci**
  - Carbon and Other Biogeochemical Cycles

- **Ice_Sheets_cci**
  - Observations: Cryosphere
  - Sea Level Change

- **Ozone_cci**
  - Evaluation of Climate Models

- **Sea_Level_cci**
  - Observations: Cryosphere
  - Sea Level Change

- **Sea_Surface_Temperature_cci**
  - Observations: Atmosphere and Surface

- **Soil_Moisture_cci**
  - Observations: Atmosphere and Surface
Phase 2 activities

- Extract from GMECV - Further Implementation Steps
  ESA/PB-EO(2012)64

  The next stage of the programme will be implemented along the following lines of action:
  1. Development of ECV data products
  2. ECV data access and user tools
  3. Promotion of ECV data exploitation

1. Development of ECV data products

   *In conformance with the programme objectives, the bulk of resources will continue to be devoted to development of ECV data products. Projects will be maintained on all thirteen ECVs currently addressed, with the aim of providing the most complete possible response to the user requirements for these ECVs*
2. ECV Data Access and User Tools
   • **Data Access Portal** - In the next stage of CCI a dedicated web portal will be set-up to provide a single point of access for all CCI data products.
   • **User Tools** - Software tools to simplify handling, inspection and analysis of the CCI data products will be developed and made freely available to users.

3. Promotion of ECV data exploitation
   • **Generation of ECV Promotional Materials** - Brochures, reports, web and mobile-based materials will be generated, to demonstrate the quality and features of the CCI data products, and their relevance for climate monitoring.
   • A suite of opportunities will be provided for young scientists to carry out **Post-Doctoral Research Projects** on climate science topics for which the ECV data products are relevant. The research topics will include the ‘Scientific grand Challenges for Global Climate Research’ identified by WCRP and scientific questions arising from the 5th IPCC Assessment Report.
Phase 2 Status

- **Development of ECV Data Product**
  - This is the continuation of the ECV Projects

- **ECV Data Access and User tools**
  - Marie-Claire has joined the ESA Climate Office and will be dedicated to these two activities.
  - Two calls for tender will be issued on these two aspects in 2014.

- **Promotion of ECV data Exploitation**
  - A “CCI Visualisation Corner” is being developed. A first version was presented at the Living Planet Symposium further work will be done in that area.
  - The Post-Doc scheme is in preparation and should be issued during the first quarter 2014.
CCI Postdoctoral Scheme

Support for up to 10 2-year postdoctoral positions to undertake research activities relevant to the Climate Change Initiative (www.esa-cci.org).

Focus on projects dedicated to:

- Exploiting Essential Climate Variable (ECV) products from CCI for improved understanding of the Earth System;
- Examining Cross-ECV consistency and multiple ECV use (those under the CCI Programme in particular).
- Enhancing interactions between CCI members and other Earth science laboratories, research centres and universities.

Funding available: 40kEuro/year
Call for proposals: April 2014
Start date: October 2014
Activities in the coming year

- Kick off Phase 2 contracts of 9 projects.
- Start work on CCI data portal & toolbox activities.
- Further develop the CCI Visualisation Tool
- Issue the call for CCI post-doctoral positions.
- Kick off CMUG Phase 2.
- Complete the Fire project
- CMUG Integration Meeting - 2-4 June 2014.
- CCI collocation #5 ESRIN – 20-22 October 2014
- Complete the 3 remaining projects
- Promote a wide use of the ECV data sets
- Continue European-level coordination on climate
  ESA-EUM-EC.
Questions
CCI Collocation #4

CCI Communication - Campaign 2014

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Pascal Lecomte

Frascati – February 6th, 2014
CCI Communication 2014
materials

- Standard CCI ppt pack?
  => (1 + 14) x 15 = 225 slides

- High quality ESA Technical Publication
  => technical audience (14x4 => 60pp)

- BAMS-like publication on CCI results?
  => state-of-art (input to GCOS assessment)

- Position paper on observations uncertainties?
  => companion, also state-of-art

- Updated CCI visualization corner
  => iPad version

- 5 min CCI promo video
  => conference exhibits

- 10x3 min storyline videos
  => climate phenomena shown by ECVs; web & exhibition

- Updated CCI web portal
  => and ECV web-sites
CCI Communication 2014

events

• **Climate Symposium 2014:**
  - October 13-17 2014
  - Darmstadt
  - Co-sponsored by ESA
  - Abstracts => deadline 15 April 2014

• **UNFCCC CoP20 Lima:**
  - 1-12 Dec 2014

• **Sentinel-1 Launch:**
  - March 28th 2014

• **Special event on CCI**
  - tbd