ECMWF/ESA workshop on using low frequency passive microwave measurements in research and operational applications

2.00

4-6 December 2017

# Welcome



# **Earth System Approach**



- Coupled model (ocean, sea-ice, land, atmosphere)
- Coupled Earth System data monitoring and assimilation
  - $\rightarrow$  Developments for reanalysis, medium, extended range and seasonal forecasts.
  - $\rightarrow$  Consistent Earth System state to initialise forecasts



## A Long Term Scenario (LTS)



- Fundamental aspects of a LTS:
  - assure user-driven continuity and increase the robustness of the existing CSC in the future (Priority)
  - **increase the quality and quantity** of the existing measurements
  - **expand observation** types according to policies and user needs
  - employ latest technologies for maximum efficiency
  - Partnerships and cooperation are essential to success
- Key driver is the evolving needs of the services prioritized by EC through various consultative processes over the last year



### Long-term scenario "Families" (expansion + extension / NG)



- Microwave Imaging Family (polar, maritime and emergency services)
  - Enhanced continuity of C-band SAR (better revisit)
  - VHR X-band SAR with high revisit
  - Expansion to include Passive Microwave Imaging
  - Expansion to include L-band SAR
- Optical Imaging Family (benefit to all services)
- Topographic Measurement Family (operational Oceanography)
- Spectroscopic Atmospheric Measurement Family
- Other Missions (cross cutting all services highlighted in EC user needs)

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4

### From Today to NG: Sentinel-1





- Continuity of C-band SAR => larger swath width to improve revisit to better resolution
- Addition of complementary **passive microwave radiometer** for polar regions:
  - State and evolution of ice, snow, permafrost together with sea surface temperature, plus land applications (hydrology, soil moisture, vegetation, flooding...)
  - Strongly improved coverage of CEOS recommended domains with European autonomy
- Addition of L-band SAR capability (ice discrimination, vegetation, land surface motion, hydrology, polar, soil moisture, etc..)

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## Copernicus High Priority Candidate Missions (HPCM) COSA

**Potential** Copernicus High Priority Candidate Missions (HPCM) under discussion include:

- 1. Anthropogenic CO2 monitoring Mission
- 2. High spatial-temporal resolution land surface temperature (LST) monitoring mission (including coastal areas)
- 3. Passive microwave imaging radiometry mission
- 4. Polar ice and snow topography mission
- 5. Hyper-spectral imaging mission (including coastal areas)
- 6. L-band SAR mission
- ESA Phase A/B1 studies for all HPCM are planned to start in early 2018
- The EC process of user needs and prioritisation is on-going and will continue in parallel
- Final selection of HPCM specific characteristics (e.g. spectral choice, number of satellites etc.) will be determined at the end of Phase A/B1

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# **Objectives**



- ✓ Support the collection of observation requirements for the next generation of low frequency passive microwave radiometers
- ✓ Consolidate the requirements across a wide range of disciplines and user communities
- ✓ Provide traceability to scientific and operational applications

# **Key questions**

- $\checkmark$  What is available and what have we achieved?
- $\checkmark$  What is needed and where shall we improve?
- ✓ What are the challenges / limitations and which synergies with other observation systems can we exploit?

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### **Schedule I**



Mon 4.12. 13:00 - 14:00	Welcome & L-band Overview
14:00 - 17:30	Carbon & Climate
Tue 5.12. 08:45 - 13:00	Polar & Cryosphere
14:00 - 18:15	Terrestrial Water Cycle & Hydrology
Wed 6.12. 08:45 - 13:00	Ocean
14:00 - 14:30	Ocean contd.
14:30 - 15:30	Splinter Sessions
15:30 - 16:00	Plenary

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Mon 4.12. 17:30 - 19:30 ECMWF	Icebreaker & Posters
Tue 5.12. 19:30 Zerodegree, Reading	Hosted Dinner
Wed 6.12. 16:00 - 16:30 ECMWF	Coffee

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# Have a good workshop

