

# Ocean Surface Topography Science Team Meeting

Millennium Hotel  
Boulder, CO  
October 8-11, 2013

**Tuesday, October 8**

Time      duration (min)

**08:00 – 08:30 Continental Breakfast**

**08:00 – 19:00      Registration, upload presentations      Millennium Room (Level 1)**

**08:30 – 10:30      Splinter Session I**

- **Splinter I – Precision Orbit Determination (Part I)**

Chairs: *Luca Cerri, Frank Lemoine*

**Century Room (Level 1)**

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|--------------|-----------|--|
| <b>08:30</b> | <b>20</b> | (Cerri et al.) Status of GDR orbits for ocean topography missions and prospects for future improvements  |
| <b>08:54</b> | <b>20</b> | (Lemoine et al.) Status of the GSFC precise orbit ephemerides for Jason-2, Jason-1 and TOPEX/Poseidon  |
| <b>09:18</b> | <b>20</b> | (Bertiger et al.) Precision Orbit Determination For JASON2 With GPS  |
| <b>09:42</b> | <b>20</b> | (Couhert et al.) Towards the 1 mm/y Stability of the Radial Orbit Error at Regional Scales   |
| <b>10:06</b> | <b>20</b> | (Rudenko et al.) Impact of recent time variable geopotential models on precise orbits of altimetry satellites, global and regional mean sea level trends |

- **Joint CAW/OSTST SARM Splinter (Part I)**

Chairs: *François Boy, Robert Cullen, Walter Smith, Paolo Cipollini, Jerome Benveniste, Phil Callahan*

**Grand Ballroom (Level 2)**

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|--------------|-----------|--|
| <b>08:30</b> | <b>5</b>  | Introduction   |
| <b>08:35</b> | <b>20</b> | (Halimi et al.) A generalized semi-analytical model for delay/Doppler altimetry and its estimation algorithms                              |
| <b>08:55</b> | <b>20</b> | (Boy et al.) CryoSat-2 SAR mode over ocean: one year of data quality assessment  |
| <b>09:15</b> | <b>20</b> | (Dinardo et al.) Validation of Open-Sea CRYOSAT-2 Data in SAR Mode in the German Bight Area  |
| <b>09:35</b> | <b>20</b> | (Roca et al.) Jason-CS Poseidon-4 Ground Prototype Processor (GPP): Processor results using simulated raw data and in orbit CryoSat-2 data |
| <b>09:55</b> | <b>20</b> | (Smith et al.) Waveform aliasing in satellite radar altimetry  |
| <b>10:15</b> | <b>15</b> | Discussion   |

**10:30 – 11:00\* Coffee Break (\*Joint Splinter Reconvenes at 10:50)**

**11:00 – 12:30 Splinter Session II**

- **Splinter I – Precision Orbit Determination (Part II)**

Chairs: *Luca Cerri, Frank Lemoine*

**Century Room (Level 1)**

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|--------------|-----------|----------------------|
| <b>11:00</b> | <b>15</b> | Poster Introductions |
|--------------|-----------|----------------------|

- (Zelensky et al.) Orbit error due to time variable gravity and impact on mean sea level trend estimates and tide gauge calibration
  - (Kyohei et al.) Development Status of GPS-Based Precise Orbit Determination System for Japanese Ocean Surface Topography Mission (COMPIRA)
- 11:20 20 (Ollivier et al.) Assessment of Orbit Quality through the SSH calculation New insight in resolving long term and inter-annual signal for climate studies
- 11:44 20 (Mercier et al.) Empirical Solar Radiation Models for Altimeter Satellites
- 12:08 20 (Bonfond et al.) SARAL/AltiKa Orbit Quality Analysis Through Short-arc Technique

### 10:50 – 12:35 Splinter Session I

- **Joint CAW/OSTST SARM Splinter (Part II)**

*Chairs: François Boy, Robert Cullen, Walter Smith, Paolo Cipollini, Jerome Benveniste, Phil Callahan*

#### **Grand Ballroom (Level 2)**

- 10:50 20 (Labroue et al.) Observing Coastal Dynamics with SAR Altimetry
- 11:10 20 (Fenoglio-Marc et al.) Validation of Coastal CRYOSAT-2 Data in SAR Mode in the German Bight Area
- 11:30 20 (Dinardo et al.) Coastal SAR Altimetry at 80 Hz
- 11:50 20 (Smith et al.) Can We Really Achieve 300-Meter Resolution from A SAR Altimeter?
- 12:10 20 (Andersen et al.) Cryosat-2 SAR-In Altimetry for Coastal Sea Level Recovery - Results from the Fjords of Eastern Greenland
- 12:30 10 Discussion

**12:30 – 14:00 Lunch**

**14:00 – 17:00 OSTST Poster Session**

**18:30 Ice Breaker – Outside in the Gardens**

## Wednesday, October 9

Time      duration (min)

### 08:00 – 09:00 Continental Breakfast

**08:00 – 19:00      Registration, upload presentations      Sunshine Room (Level 2)**

**09:00 – 10:30      Plenary Session I**

**Grand Ballroom (Level 2)**

<b>09:00 – 09:35</b>	<b>Welcoming remarks and program status (Chair: Josh Willis)</b>
<b>09:00      5</b>	Meeting overview (Josh Willis, on behalf of the Project Scientists)
<b>09:05      20</b>	NASA/CNES/EUMETSAT/NOAA/ESA program status (all Program Managers)
<b>09:25      10</b>	Program Status of SARAL/AltiKa (Kiran Kumar)
<b>09:35 – 10:30</b>	<b>Jason1/2/3/CS Project Status (Chair: Eric Lindstrom)</b>
<b>09:35      15</b>	Jason-1 mission overview (Glenn Shurtleffe)
<b>09:50      30</b>	Jason-2 mission overview and Jason-3 status (Thierry Guinle & Gerard Zaouche)
<b>10:20      10</b>	Jason-CS news and developments (Richard Francis)

### 10:30 – 10:50 Coffee Break

**10:50 – 12:35      Plenary Session II**

**Grand Ballroom (Level 2)**

<b>10:50 – 12:20</b>	<b>Keynote Talks (Chair: Pascal Bonnefond)</b>
<b>10:50      30</b>	<b>IPCC Assessment: Sea Level and Oceanography</b> (Steve Nerem/Don Chambers)
<b>11:20      20</b>	<b>Jason-1, 11.5 years of accomplishments</b> (Rosemary Morrow)
<b>11:40      20</b>	<b>SARAL/Altika</b> (Jacques Verron)
<b>12:00      20</b>	<b>SWOT mission design for advancing mesoscale oceanography</b> (Lee-Lueng Fu)
<b>12:20-12:30</b>	<b>Discussion points for the Splinter Sessions (Chair: John Lillibridge)</b>
<b>12:20      10</b>	Possible Topics:
	1. Linking past LRM altimetry with existing and future SAR missions.
	2. Consistency of MSL computed by different groups (Cal/Val splinter, 2012)
	3. Thinking about the time phasing of Jason-2/Jason-3 for the interleaved phase (after the Formation Flight Phase)
	4. Improvement of SSB: can SAR resolution help? What about differences from LRM, SAR and Ka-band?
	5. Monitoring Sigma0 and wind with sufficient accuracy for climate studies
	6. POD in the case that GRACE is lost? Can it be anticipated?
	7. Wet troposphere retrieval: to what extent are observations limited by methods as opposed to instrument? Can more models in the CALVAL monitoring and in the products?
	8. Jason-1/TOPEX reprocessing?

### 12:30 – 14:00 Lunch

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**14:00 – 15:30 Splinter Session III**

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**• Splinter III – Regional & Global Cal/Val (Part I)***Chairs: Pascal Bonnefond, Bruce Haines***Century Room (Level 1)**

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|--------------|-----------|--|
| <b>14:00</b> | <b>15</b> | (Watson et al.) Ongoing monitoring of absolute bias from the Australian In-Situ Calibration Sites: Bass Strait and Storm Bay                     |
| <b>14:15</b> | <b>15</b> | (Haines et al.) The Long-term Altimeter Calibration Record from the Harvest Platform   |
| <b>14:30</b> | <b>15</b> | (Bonnefond et al.) Corsica: a multi-mission absolute calibration site  |
| <b>14:45</b> | <b>15</b> | (Mertikas et al.) Latest Results for the absolute calibration of Jason and HY-2 satellites using the Gavdos/Crete permanent calibration facility |
| <b>15:00</b> | <b>15</b> | (Cancel et al.) Regional CalVal of Jason-2 and Envisat in Corsica and at Harvest   |
| <b>15:15</b> | <b>15</b> | (Prandi et al.) Analyses of altimetry errors using in-situ measurements: tide gauges and Argo profiles   |

**• Splinter IV – Science (Part I): Large Scale Oceanography***Chairs: Dean Roemmich, Rosemary Morrow, John Lillibridge***Grand Ballroom (Level 2)**

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|--------------|-----------|---|
| <b>14:00</b> | <b>15</b> | (Andersen et al.) Large scale Sea Level variation in the Arctic Ocean from Cryosat-2 SAR altimetry                                |
| <b>14:15</b> | <b>15</b> | (Jayne et al.) Mapping the ocean's surface circulation from altimetry   |
| <b>14:30</b> | <b>15</b> | (Goni et al.) Meridional Changes of the South Atlantic Meridional Overturning Circulation   |
| <b>14:45</b> | <b>15</b> | (Kelly et al.) The Contributions of Ekman Heat Advection to Meridional Heat Transport Anomalies in the Atlantic Ocean             |
| <b>15:00</b> | <b>15</b> | (Zavala-Garay et al.) Satellite-based ocean analysis for the MidAtlantic Bight  |
| <b>15:15</b> | <b>15</b> | (Bulusu et al.) Integrated multi-mission Satellite Altimetry data in Climatic Studies- Detection of the Madden-Julian Oscillation |

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**15:30 – 16:00 Coffee Break**

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**16:00 – 17:30 Splinter Session IV**

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**• Splinter V – Regional & Global Cal/Val (Part II)***Chairs: Shailen Desai, Eric Leuliette and Nicolas Picot***Century Room (Level 1)**

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|-------------------------|----------------------|---|
| <b>16:00</b>            | <b>15</b>            | (Philipps & Desai) Global Jason-1&2 quality assesment: joint CNES & JPL presentation  |
| <del><b>16:15</b></del> | <del><b>15</b></del> | <del>(Leuliette et al.) Intermission and tide gauge comparisons with Jason-2</del>  |
| <b>16:15</b>            | <b>15</b>            | (Watson et al.) Improving the tide gauge validation for the altimeter sea level climate record  |
| <b>16:30</b>            | <b>15</b>            | (Picot et al.) Global SARAL Data Quality Assessment of IGDR and GDR data  |
| <b>16:45</b>            | <b>15</b>            | (Scharroo et al.) Early look at SARAL/AltiKa data   |
| <b>17:00</b>            | <b>15</b>            | (Dettmering et al.) Performance and consistency of different satellite altimeter systems assessed by means of global multi-mission crossover analysis |
| <b>17:15</b>            | <b>15</b>            | (Brown et al.) An End-of-Mission Climate Quality Calibration for the JMR – Inter-satellite Calibration with the SSM/I Fundamental Climate Data Record |

**• Splinter VI – Outreach, Education & Data Services***Chairs: Vinca Rosmorduc, Margaret Srinivasan***Grand Ballroom (Level 2)**

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|--------------|-----------|---|
| <b>16:00</b> | <b>15</b> | (De Staerke & Richardson) The 7th Continent Expedition : International Student Participation in a Voyage to the “Great Pacific Garbage Patch” |
| <b>16:15</b> | <b>15</b> | (Richardson) Outreach in a Changing Budget Climate: More or Less, Doing More with Less  |
| <b>16:30</b> | <b>15</b> | (Briol et al.) AVISO: online data extraction service for all altimetry users  |
| <b>16:45</b> | <b>15</b> | (Byrne et al.) NOAA Archive and Access Services for Jason-2/3 Products  |
| <b>17:00</b> | <b>15</b> | (Hausman) Reformatted SEASAT Data and Improved Tools at PO.DAAC   |
| <b>17:15</b> | <b>15</b> | (All) SHOWCASE of altimeter outreach  |

**18:30 Everyone's free tonight?**

## Thursday, October 10

Time      duration (min)

### 08:00 – 08:30 Continental Breakfast

**08:00 – 19:00**      **Registration, upload presentations**      **Sunshine Room (Level 2)**

**08:30 – 09:10**    **Plenary Session III**

**Grand Ballroom (Level 2)**

**08:30 – 09:10**      **Keynote Talks (Chair: Hans Bonekamp)**

**08:30**    **20**      **Meso/Submesoscale Dynamics and Their Impact on Sea Level** (Patrice Klein)

**08:50**    **20**      **Earth's energy imbalance and implications for ocean heat content** (Kevin Trenberth)

**9:15 – 10:45 Splinter Session V**

- **Splinter VII – Science (Part II): Climate Change in the Ocean and Sea Level Rise**

*Chairs: Benoit Meyssignac, Steve Nerem*

**Grand Ballroom (Level 2)**

**09:15**    **15**      (Ablain et al.) Two Decades of Global and Regional Sea Level Observations from the ESA Climate Change Initiative Sea Level Project

**09:30**    **15**      (Lagerloef et al.) The Phase of the Pacific Decadal Oscillation (PDO) and Sea Level Trends in the North Pacific

**09:45**    **15**      (Hamlington et al.) Pacific Decadal Oscillation Contribution to Global and Regional Sea Level

**10:00**    **15**      (Carton et al.) Sea level in ocean reanalyses and tide gauges -- how similar?

**10:15**    **15**      (Fasullo et al.) Australia's unique Influence on global sea in 2010-2011

**10:30**    **15**      (Fukumori et al.) Observations and Mechanisms of Near-Uniform Sea Level and Ocean Bottom Pressure Fluctuations Spanning the Arctic Ocean and the Nordic Seas

- **Splinter VIII – Instrument Processing (Part I): Wet troposphere**

*Chairs: Shannon Brown, Estelle Obligis*

**Century Room (Level 1)**

**09:15**    **5**      Introduction

**09:20**    **20**      (Obligis et al.) Bifrequency radiometer for Ka band altimetry mission: issues and way of improving retrieval algorithms

**09:40**    **20**      (Frery et al.) AltiKa Radiometer: first results of in-flight calibration

**10:00**    **20**      (Thao et al.) Comparison of Retrieval Algorithms for the Wet Tropospheric Path Delay

**10:20**    **20**      Discussion

### 10:45 – 11:00 Coffee Break

**11:00 – 12:30 Splinter Session VI**

- **Splinter IX – Science (Part III): Mesoscale, Sub-Mesoscale Oceanography**

*Chairs: Jacques Verron, Lee Fu*

**Grand Ballroom (Level 2)**

**11:00**    **15**      (Jacobs et al.) Submesoscale prediction and effects on surface dispersion during the Grand Lagrangian Deployment (GLAD) Experiment

**11:15**    **15**      (Tournadre et al.) A 20-year analysis of Alboran sea ocean current from high resolution altimeter data

**11:30**    **15**      (Strub et al.) Processes Connecting Coastal to Basin-Scale Ocean Circulation: SW Atlantic Ocean

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|-------|----|---|
| 11:45 | 15 | (Gaubé et al.) Regional Variations in the Influence of Mesoscale Ocean Eddies on Near-surface Chlorophyll |
| 12:00 | 15 | (Samelson et al.) Randomness, symmetry and scaling of mesoscale eddy life cycles                          |
| 12:15 | 15 | (Ubelmann et al.) New perspectives for future high-level Ocean Altimetry products                         |

- **Splinter X – Instrument Processing (Part II): Ka-band, Wind Speed and Sea State Bias**

*Chairs: François Boy, Robert Cullen, Walter Smith, Phil Callahan*

**Century Room (Level 1)**

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|-------|----|--|
| 11:00 | 20 | (Stenou et al.) AltiKa in-flight performances  |
| 11:20 | 20 | (Poisson et al.) First SARAL/AltiKa Results: Overview of the Altimeter Performances                  |
| 11:40 | 20 | (Lillibridge et al.) One and Two-Dimensional Wind Speed Models for Ka-band Altimetry                 |
| 12:00 | 20 | (Vandemark et al.) Assessing sea state bias correction models for differing frequencies and missions |
| 12:20 | 20 | Discussion and Recommendations   |

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**12:30 – 14:00 Lunch**

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**14:00 – 15:30 Splinter Session VII**

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- **Splinter XI – Science (Part IV): Large Scale Oceanography**

*Chairs: Dean Roemmich, Josh Willis, Hans Bonekamp*

**Grand Ballroom (Level 2)**

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|------------------|---------------|---|
| <del>14:00</del> | <del>15</del> | <del>(Schmid) Mean vertical and horizontal structure of the subtropical circulation in the South Atlantic from three-dimensional observed velocity fields</del> |
| 14:15            | 15            | (Hakkinen et al.) Northern North Atlantic sea surface height and ocean heat content variability   |
| 14:30            | 15            | (Kosempa et al.) Estimates of Geostrophic Transport in the Southern Ocean by Combining Satellite Altimetry and Temperature/Salinity Profile Data                |
| 14:45            | 15            | (Zilberman et al.) Western Boundary Current Velocity and Transport: Combining Altimetry, XBT, and Argo  |
| 15:00            | 15            | (Qiu et al.) Large-Scale Pacific Ocean Sea Level and Circulation Changes vs. the PDO Forcing  |
| 15:15            | 15            | (Roemmich et al.) The Annual Cycle of Steric Height and Sea Surface Height in the Equatorial Pacific  |

- **Splinter XII – Near Real Time Products and Applications**

*Chairs: Emilie Bronner, Julia Figa Saldana, Gregg Jacobs, John Lillibridge*

**Century Room (Level 1)**

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|-------|----|---|
| 14:00 | 13 | Introduction and Poster Summary   |
| 14:13 | 11 | (Picot et al.) Towards an Operational Use of HY-2A in SSALT/Duacs: Evaluation of the Altimeter Performances Using NSOAS S-IGDR Data   |
| 14:24 | 11 | (Schwatke et al.) Using Multi-Mission Satellite Altimetry for Estimating Water Level Time Series of Inland Waters – The new Database for Hydrological Time Series of Inland Waters (DAHITI) |
| 14:35 | 11 | (Dorandeu) Altimetry impact studies on global ocean analysis and forecasts at Mercator Ocean  |
| 14:46 | 11 | (Wilkin et al.) Real-time Data Assimilative Modeling of the U.S. Mid-Atlantic Bight Shelf   |
| 14:57 | 11 | (Li) Improved Representation of Eddies in Regional Realtime Forecasting Systems Using Multi-Scale Data Assimilation of Satellite Altimetry  |
| 15:08 | 11 | (Stum et al.) An objective analysis derived water vapour path delay correction for altimetric missions: nrt application to jason-2 and cryosat-2 over the ocean                             |
| 15:19 | 11 | (Lotfi et al.) On the impact of Saral/altika wave data in the wave forecasting system of Météo-France   |

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**15:30 – 16:00 Coffee Break**

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**16:00 – 17:30 Splinter Session VIII**

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- **Splinter XIII – Geoid, Mean Sea Surface**

*Chairs: Ole B. Andersen, Yannice Faugere*

**Century Room (Level 1)**

- 16:00 15 (Andersen et al.) The DTU13 Global marine gravity field – first evaluation
- 16:15 15 (Sandwell et al.) New Marine Gravity from Jason-1 and CryoSat-2 Reveals Tectonics, Seamounts, and Abyssal Fabric
- 16:30 15 (Andersen et al.) The DTU13 global mean sea surface from 20 years of satellite altimetry
- 16:45 15 (Pujol et al.) A 20-year reference period for SSALTO/DUACS products
- 17:00 15 (Mulet et al.) New global Mean Dynamic Topography from a GOCE geoid model, altimeter measurements and oceanographic in-situ data
- 17:15 15 (Gille et al.) Assessing Mean Dynamic Ocean Topography Using State Estimation Constraints

- **Splinter XIV – Quantifying Errors and Uncertainties in Altimetry Data**

*Chairs: Joel Dorandeu, Remko Scharoo, Michael Ablain*

**Grand Ballroom (Level 2)**

- ~~16:00 15 (Leuliette et al.) What do errors between altimeters tell us about the length of the Jason-3/Jason-CS calibration phase?~~
- 16:00 15 (Dufau et al.) Reducing altimetry small-scales errors to access (sub)mesoscale dynamics: dream or reality?
- 16:15 15 (Henry et al.) Effect of the processing methodology on satellite altimetry-based global mean sea level rise over the Jason-1 operating period
- 16:30 15 (Dibarboue et al.) Investigating short wavelength correlated errors on low resolution mode altimetry
- 16:45 15 (Ubelmann et al.) Wavenumber spectrum of estimated uncertainty in Jason-2 sea surface height measurement
- 17:00 15 (Stammer) Accuracy Assessment of Global Ocean Tide Models
- 17:15 15 (Richman et al.) Sampling errors in the decomposition of vertical modes from current meter data estimated using an eddy-resolving ocean circulation model with embedded tides

**19:00 Conference Dinner**

**Special talk about his time at NASA by Waleed Abdalati**



## Friday, October 11

Time      duration (min)

**08:00 – 09:00 Continental Breakfast**

**08:00 – 19:00      Upload presentations      Sunshine Room (Level 2)**

**09:00 – 11:00      Round tables for each splinter (and OSTST poster session for other participants)**

**11:00 – 11:30 Coffee Break**

**11:30 – 12:30      Time for side meetings such as S3VT, PS's to organize recommendations**

**12:30 – 14:00 Lunch**

**14:00 – 16:15      Plenary Session IV**

**Grand Ballroom (Level 2)**

**14:00 Splinter meeting summaries & recommendations (presented by session chairs)**

- 14:00      Regional and Global CAL/VAL for Assembling a Climate Data Record
- 14:10      Precision Orbit Determination
- 14:20      Instrument processing
- 14:30      SAR Mode
- 14:40      Near Real Time Products and Applications
- 14:50      Outreach, Education & Altimetric data services
- 15:00      The Geoid Mean Sea Surfaces and Mean Dynamic Topography
- 15:10      Quantifying Errors and Uncertainties in Altimetry Data
- 15:20      Science Results from Satellite Altimetry
- 15:30      Coastal Altimetry Workshop
- 15:45      Discussion

**Summary and recommendation**

**Chairs:      Rosemary Morrow, Josh Willis, John Lillibridge, Hans Bonekamp, Pascal bonnefond**

**16:15 – 16:30 Coffee Break**

**16:00 – 17:30      Plenary Session V**

**Grand Ballroom (Level 2)**

**16:30 GDR Product discussion & recommendations (Nicolas Picot)**

- 16:30      Topex Reprocessing/GDR-C (P. Callahan)
- 16:45      Jason/GDR-D (N. Picot)

**17:00 conclusions and wrap-up (Project Scientists)**

**17:30 Adjourn**