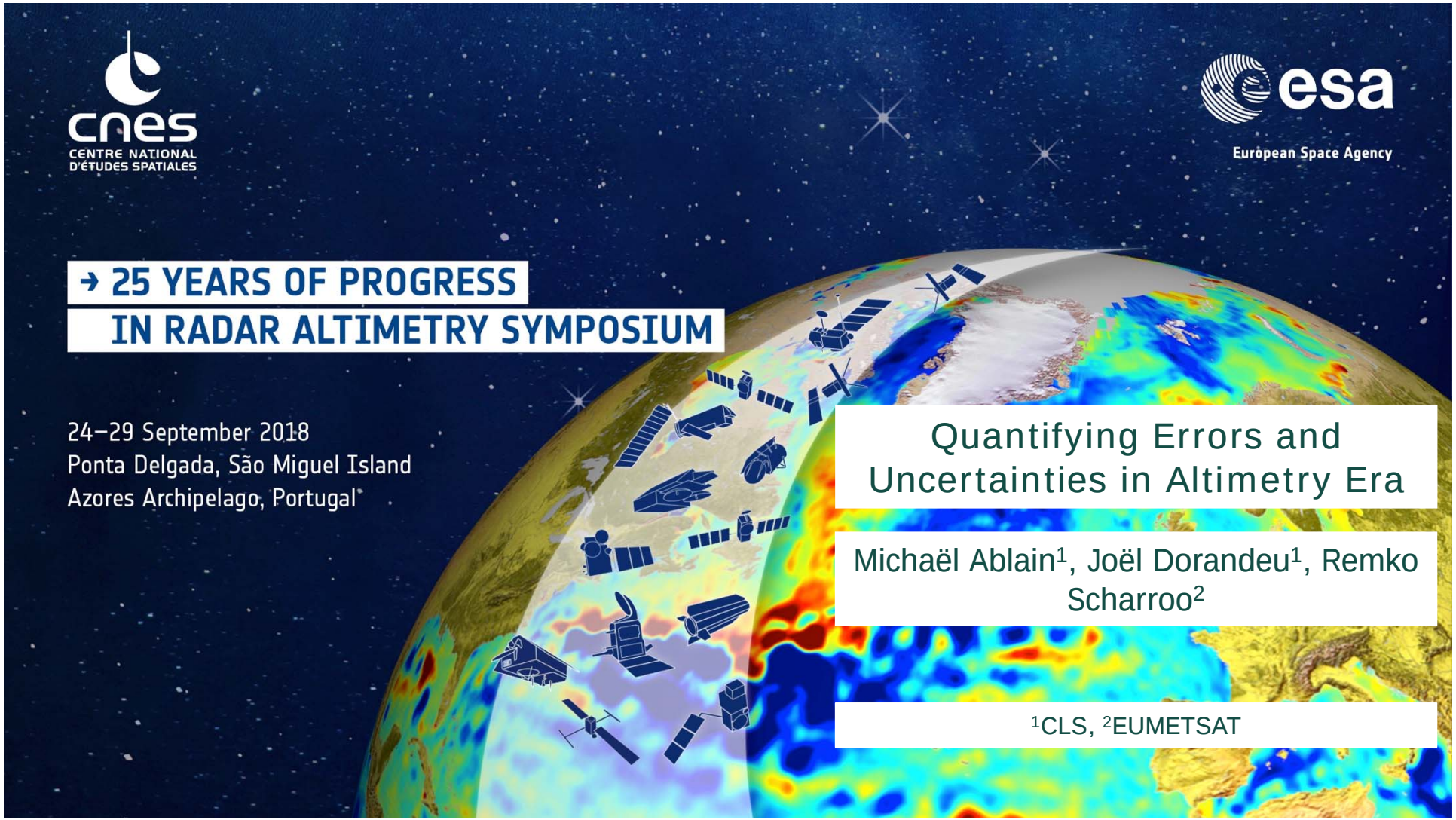

Quantifying Errors and Uncertainties in Altimetry Era

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Quantifying Errors and Uncertainties in Altimetry data

- **6 talks, 9 posters:**

⇒ **error detection and characterization**: Sea level and SWH high frequency content error, sea level coastal measurements error, aliased tidal variability in mesoscale sea level, GMSL error budget, etc …

⇒ **error reduction** : new SAR processing (e.g. LR-RMC), GAL…

⇒ **error formalism and method** : triple collocation method, realistic uncertainty calculation, confidence interval, etc …

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- **Issue #1: High frequency error reduction on S3-A measurements**
  - Sea Level and SWH high frequency content (< 100 km) derived from SAR-M processing corrupted by swell effects (**S. Labroue & M. Raynald**).
  - Triple-collocation (S3 altimetry, buoys, models) method helps characterizing SWH noise (**S. Abdalla et a**l.)
  - New LR-RMC SAR processing (**T. Moreau et al.**) reduced these high frequency errors by 30% at global scale (**Y. Faugere et al.)**
  - Remaining high frequency errors are observed due to the MSS not yet tuned for S3 ground track (**Y. Faugere et al.)**
  - ⇒ **Need to perform a whole reprocessing to compute a dedicated mean profile, which is also needed for regional studies**

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- **Issue #2: Sea level errors characterization from mesoscale to climate scales**
  - Detection of residual tidal variability in SLA gridded products **(E. Zaron et al.) – 1 cm –** that could be reduced by filtering SLA or/and correcting internal tides prior to gridding procedure
  - Characterization of the different sources of altimeter errors affecting the coastal sea-level measurements (**F. Birol and Niño**) and estimation of the coastal Sea level trend uncertainties (**R. Jugier et al.**) : 1.3 mm/yr vs. 0.6 mm/yr in open ocean (10 years)
  - For appropriate studies of dynamics and sea level budgets using altimeter records, correcting for gravitational attraction and loading (GAL) signals (as done for IB) is important for trends, possibly for seasonal variability as well (**R. Ponte et al.)**

  ⇒ **Implement a GAL correction when fully validated**

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- **Issue #3: Uncertainty formalism (from Benoit Meyssignac, side discussion of the session)**
  - The σ levels and conficence levels are fine in the scientific community to describe uncertainties
  - ⇒ **The only important thing is to provide the σ level or the confidence level when we provide an uncertainty range**
  - But the σ levels and CL levels are **NOT** fine for outreach towards stakeholders, politicians, schools, or general public
  - The IPCC worked hard on this issue (see Mastrandrea et al. Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties available online)

- **Issue #3: Uncertainty formalism (from Benoit Meyssignac, side discussion of the session)**
  - They found that the following table is the best correspondance between the common language and the scientific confidence language:
    - something is likely to be true if it has a 68%CL
    - something is very likely to be true if it has a 90%CL
    - something is virtually certain if it has a 99.7%CL
  - « calibrated language » is very useful for outreach towards the public because it is calibrated, traceable, documented and published !

⇒ **Suggestion to adopt it for outreach, especially when we deal with a very visible variable such as the GMSL**