CONCLUSIONS

CP4O has demonstrated that CryoSat-2 data provide users with significantly improved measurements over the ocean, and has developed and evaluated a series of demonstration products intended to exploit this capability. This work has required some in-depth studies and innovative technical developments, helping to build a better technical understanding of SAR altimetry over the oceans. Recommendations for further work and exploitation have been provided in a Scientific Roadmap.

NEW PRODUCTS DEVELOPMENT AND VALIDATION

The core of the CryoSat Plus for Oceans project was the development and validation of algorithms and processing schemes for new ocean products, based on CryoSat-2 data. 7 new experimental data sets and 3 new geophysical correction data sets were created, and are listed below

New Experimental Altimeter Data Sets
1. LRM for Open Ocean (TU Delft)
2. SAR for Open Ocean (Starlab, CLS)
3. SAR for Sea Floor Mapping (DTU Space)
4. SAR for Coastal Ocean (NOC)
5. SAR for Polar Ocean (DTU Space)
6. RDSAR for Open Ocean (CLS, TU Delft)
7. SARIn for Coastal Ocean (isardSAT)

Algorithm Theoretical Basis Documents and Product Validation Reports are available for each of these products at www.satoc.eu/projects/CP4O.

IMPACT ASSESSMENT

CLS carried out independent assessments of the demonstration data sets. Key findings were:
- RDSAR: It was confirmed that the two schemes (TU Delft RADS, and CNES/CLS CPP) provided continuity across the transition from LRM to SAR mode, though some small discrepancies remained between ascending and descending tracks. Analysis of a longer data set is recommended to provide improved statistics and to identify any possible drifts.
- SAR: Agreement between the full implementation of the SAMOSA echo model and the numerical model in CPP is perfect with both well suited to derive very accurate and precise SAR altimeter measurements. Modifications to correct errors at low SWH in a simplified (but more computationally efficient) version of SAMOSA are required.
- Geophysical Corrections: The new U Porto Wet Troposphere correction shows an appreciable improvement over the currently available model. The COMAPI regional tide model provides an improvement on North-Western European shelf at scales of 50-200 km. No improvement could be detected through the use of the new ionosphere model, but the area studied (Europe) is not the most dynamic region.

SCIENTIFIC ROAD MAP

Finally, the results of the Impact Assessment have been used to define an agreed Scientific Roadmap to ensure fullest possible exploitation of CryoSat-2 data over the oceans, and to support the transfer of the results into scientific and operational activities.

CONCLUSIONS

CP4O has demonstrated that CryoSat-2 data provide users with significantly improved measurements over the ocean, and has developed and evaluated a series of demonstration products intended to exploit this capability. This work has required some in-depth studies and innovative technical developments, helping to build a better technical understanding of SAR altimetry over the oceans. Recommendations for further work and exploitation have been provided in a Scientific Roadmap.

NEW PRODUCTS DEVELOPMENT AND VALIDATION

The core of the CryoSat Plus for Oceans project was the development and validation of algorithms and processing schemes for new ocean products, based on CryoSat-2 data. 7 new experimental data sets and 3 new geophysical correction data sets were created, and are listed below

New Experimental Altimeter Data Sets
1. LRM for Open Ocean (TU Delft)
2. SAR for Open Ocean (Starlab, CLS)
3. SAR for Sea Floor Mapping (DTU Space)
4. SAR for Coastal Ocean (NOC)
5. SAR for Polar Ocean (DTU Space)
6. RDSAR for Open Ocean (CLS, TU Delft)
7. SARIn for Coastal Ocean (isardSAT)

Algorithm Theoretical Basis Documents and Product Validation Reports are available for each of these products at www.satoc.eu/projects/CP4O.

IMPACT ASSESSMENT

CLS carried out independent assessments of the demonstration data sets. Key findings were:
- RDSAR: It was confirmed that the two schemes (TU Delft RADS, and CNES/CLS CPP) provided continuity across the transition from LRM to SAR mode, though some small discrepancies remained between ascending and descending tracks. Analysis of a longer data set is recommended to provide improved statistics and to identify any possible drifts.
- SAR: Agreement between the full implementation of the SAMOSA echo model and the numerical model in CPP is perfect with both well suited to derive very accurate and precise SAR altimeter measurements. Modifications to correct errors at low SWH in a simplified (but more computationally efficient) version of SAMOSA are required.
- Geophysical Corrections: The new U Porto Wet Troposphere correction shows an appreciable improvement over the currently available model. The COMAPI regional tide model provides an improvement on North-Western European shelf at scales of 50-200 km. No improvement could be detected through the use of the new ionosphere model, but the area studied (Europe) is not the most dynamic region.

SCIENTIFIC ROAD MAP

Finally, the results of the Impact Assessment have been used to define an agreed Scientific Roadmap to ensure fullest possible exploitation of CryoSat-2 data over the oceans, and to support the transfer of the results into scientific and operational activities.

CONCLUSIONS

CP4O has demonstrated that CryoSat-2 data provide users with significantly improved measurements over the ocean, and has developed and evaluated a series of demonstration products intended to exploit this capability. This work has required some in-depth studies and innovative technical developments, helping to build a better technical understanding of SAR altimetry over the oceans. Recommendations for further work and exploitation have been provided in a Scientific Roadmap.