



# 13th COASTAL ALTIMETRY WORKSHOP & COASTAL ALTIMETRY TRAINING

6–10 February 2023 | Universidad de Cádiz, Spain

## PROGRAMME



Monday 6 February 2023

Time	Title	Lecturer
9:00	Welcome and Introduction	Jérôme Benveniste
<b>RADAR ALTIMETRY</b>		
9:10	Low Resolution & Unfocused SAR Altimetry	Marco Restano
10:10	Fully-Focused SAR Altimetry	Samira Amraoui
<b>10:50</b>	<b>Coffee Break</b>	
<b>ONLINE PROCESSING PLATFORMS &amp; TOOLBOXES</b>		
11:10	The Broadview Radar Altimetry Toolbox (BRAT) & The ESA Altimetry Virtual Lab on EarthConsole®	Marco Restano
<b>DATASETS FOR COASTAL ALTIMETRY</b>		
12:10	Access to Sentinel-6 Michael Freilich Radar Altimetry Data	Vinca Rosmorduc
12:25	The ESA Coastal Sea Level CCI+ Dataset	Lancelot Leclercq
12:40	The ESA Baltic+ SEAL Dataset	Julius Oelsmann

Monday 6 February 2023

<b>12:55</b>	<b>Lunch*</b>	
14:00	The ESA HYDROCOASTAL Dataset	David Cotton
14:15	The ESA FF-SAR for Coastal Zone Dataset	David Cotton
<b>14:30</b>	<b>Coffee Break</b>	
<b>FIELDS OF APPLICATION FOR COASTAL ALTIMETRY</b>		
14:50	Synergy and Validation with Tide Gauges	Jesús Gómez-Enri
15:25	Coastal Circulation and Currents	Florence Birol / Fabien Léger
16:00	Waves from Space in Synergy with Wave Modelling	Sonia Ponce de Leon
16:45	Coastal Hazards	Claire Dufau
<b>17:20</b>	<b>Open Discussion, Q&amp;A, Outlook</b>	<b>All</b>
<b>18:20</b>	<b>End of Training</b>	

\*Please note that the University of Cadiz gave availability of the canteen starting at 13:00, not before, all throughout the week

Tuesday 7 February 2023

DAY 1

## Opening Session

9:00 | Welcome and Introduction – María Jesús Mosquera Díaz, Vice-chancellor of Research and Technology, U. Cádiz, and J. Benveniste, ESA

9:10 | Keynote: Waves in the Coastal Zone – Sonia Ponce de Leon

	<b>SESSION 1: Technical issues in coastal altimetry</b>	<b>Chairs: Florence Birol and David Cotton</b>
9:40	Round Robin Assessment of altimetry algorithms for coastal sea surface height data	F. Birol et al.
10:00	Coastal Altimetry Datasets Performance in Indonesian Seas	Z. A. Nadzir et al.
10:20	Improving SAR Altimeter Processing Over the Coastal Zone - The ESA HYDROCOASTAL Project	D. Cotton et al.
<b>10:40-11:10</b>	<b>Coffee Break</b>	
	<b>SESSION 1: Technical issues in coastal altimetry (cont'd)</b>	<b>Chairs: Walter Smith and Mohammad Tourian</b>
11:10	Improving coastal water altimetry retracking by incorporating spatial dependency of waveforms	M. Tourian et al.

11:30	Analysis of Sea Level Variability in German Bight and Baltic Sea by Using Fully-Focused and Unfocused SAR Altimeter Products and GNSS Reflectometry	H. Uyanik et al.
11:50	SARAL Altimeter-collected SSH Validation and Calibration using Algerian Tide Gauges	A. Rami et al.
12:10	Evaluating the new HRMR wet tropospheric correction from Sentinel-6MF over coastal regions	J. Fernandes et al.
12:30	Improving Wet Path Delay Measurement in the Coastal Zone with the High Resolution Microwave Radiometer (HRMR) on Sentinel-6	S. Brown et al.
<b>12:50-14:00</b>	<b>Lunch</b> (University of Cádiz canteen is available at 13:00, not before)	
	<b>SESSION 1: Technical issues in coastal altimetry (cont'd)</b>	<b>Chairs: Clara Làzaro and Francesco Nencioli</b>
14:00	Fully Focused SAR Altimetry and Innovative River Level Gauges for Coastal Monitoring – the FFSAR-Coastal Project	D. Cotton et al.
14:20	ALBATROSS: Improving the bathymetry and ocean tide knowledge in the Southern Ocean with satellite observations	M. Cancet et al.
14:40	Sentinel-3 Topography mission Assessment through Reference Techniques – The ESA St3TART project	E. Da Silva et al.

15:00	The Cryo-TEMPO Coastal Ocean Thematic Data Product: A CryoSat-2 Regional Product for Ocean Applications	F. Nencioli et al.
15:20	Oceans Radar Altimetry With MAGAL Constellation	C. Lázaro et al.
<b>15:40-16:10</b>	<b>Coffee Break</b>	
	<b>SESSION 1: Technical issues in coastal altimetry (cont'd)</b>	<b>Chairs: Clara Lázaro and Francesco Nencioli</b>
16:10	SWOT early flight data status and plan for data product release	N. Picot et al.
16:30	Towards validation of SWOT and new coastal processing algorithms: An altimetry and water level gauge case study in the Bristol Channel and Severn Estuary area	I. Lichtman et al.
<b>16:50-17:50</b>	<b>SESSION 1 - Discussion</b>	<b>Chairs: Florence Birol, David Cotton, Walter Smith, Mohammad Tourian, Clara Lázaro and Francesco Nencioli</b>
<b>17:50-19:00</b>	<b>POSTER SESSION &amp; Ice Breaker</b>	

<b>SESSION 2: Applications of coastal altimetry data</b>		<b>Chairs: Luciana Fenoglio and Stefano Vignudelli</b>
9:00	Potential Applications of SWOT High-Resolution Sea Surface Height Observations to Studying the Coastal Impact of Sea Level Rise	L.-L. Fu et al.
9:20	Statistical decompositions of coastal surface currents and sea surface heights and evaluation of their performance	S. Y. Kim et al.
9:40	Estuarine water level change from high resolution altimetry	L. Fenoglio et al.
10:00	Validation and Use of Altimetry Products in the Southwestern Atlantic Continental Shelf	L. Ruiz-Etcheverry et al.
10:20	Detecting Coastal Flow Reversals Over the Gulf of Cádiz Using Multi-mission Altimetry Data	R. Mulero-Martinez et al.
10:40	On Assessing the Performances of Sentinel-3 Radar Altimetry in Sheltered Coastal Regions: Case-Study of the Grado-Marano Lagoon System in the Northern Adriatic Sea	S. Vignudelli et al.
<b>11:00-11:30</b>	<b>Coffee Break</b>	
<b>SESSION 2: Applications of coastal altimetry data (cont'd)</b>		<b>Chairs: Matea Tomic and Anrijs Abele</b>

11:30	An assessment of conventional and retracked Sentinel-3 data with implications for an updated coastal mean sea surface with associated errors in Norway	M. Tomic et al.
11:50	Origin of Sea-level Changes on the Shelf of the Northwest Atlantic from Sentinel-3A SRAL	A. K. Abele et al.
12:10	Assessment of Sentinel-6A Data in a Complex Macrotidal Semi-enclosed Sea (Pertuis Charentais, France)	Y.-T. Tranchant et al.
12:30	CryoSat: Mission Status and Future Challenges over the Coastal Zones	J. Bouffard et al.
12:50	An ICESat-2-based Assessment of Coastal Sea-level Trends and Variability	B. Buzzanga et al.
<b>13:10-14:20</b>	<b>Lunch</b> (University of Cádiz canteen is available at 13:00, not before)	
	<b>SESSION 2: Applications of coastal altimetry data (cont'd)</b>	<b>Chairs: Claire Maraldi and John Wilkin</b>
14:20	Development of regional high-resolution hydrodynamic models in estuarine regions: The Seine and Elbe cases	R. Ferrari et al.
14:40	Regional ocean modeling with data assimilation for improving Mean Dynamic Topography and sea level variability forecasting in the coastal ocean	J. Wilkin et al.



15:00	Coherent modes of coastal sea level variability from altimetry and tide gauge observations	J. Oelsmann et al.
15:20	Wind as driver of sub-annual Sea level anomalies on South Brazil and Patagonian Shelf	M.-C. Juhl et al.
15:40	Coastal-to-open Ocean Exchange Processes in the California Current System from altimetry, ADCP and HFR data	S. Soares et al.
16:00	Joint Estimates of Coastal Sea-Level Trend and Vertical Land Motion in the Northern Gulf of Mexico	C. K. Shum et al.
16:20-16:50	<b>Coffee Break</b>	
16:50-17:50	<b>SESSION 2 - Discussion</b>	<b>Chairs: Luciana Fenoglio, Stefano Vignudelli, Matea Tomic, Anrijs Abele, Claire Maraldi and John Wilkin</b>
17:50-18:50	<b>POSTER SESSION</b>	
20:30	<b>Social Dinner [No-Host]</b>	

	<b>SESSION 3: Synergistic, Climate Studies &amp; Operationalisation</b>	<b>Chairs: Nicole Delpeche-Ellmann and Guoqi Han</b>
9:00	Altimetry-observed shelf-edge currents off western Canada	G. Han et al.
9:20	Accurate Dynamic Topography by Satellite Altimetry and Marine Geoid Model	M. Mostafavi et al.
9:40	Forecasting Of Absolute Dynamic Topography By Utilizing Machine Learning With Synergy Of Satellite Altimetry Data	N. Delpeche-Ellmann et al.
10:00	Contribution of altimetry to the Gulf of Guinea climate resilience due to last decade sea level anomalies scenarios	F. E. Kemgang Ghomsi et al.
10:20	Sea Level Variability at Several Time Scales in The Cuban Archipelago	M. Hernández-González et al.
<b>10:40-11:10</b>	<b>Coffee Break</b>	
	<b>SESSION 3: Synergistic, Climate Studies &amp; Operationalisation (cont'd)</b>	<b>Chairs: Marie-Isabelle Pujol and Julius Oelsmann</b>
11:10	Toward Higher resolution Level-3 altimeter sea level products	M.-I. Pujol et al.
11:30	The relationship of Mean Sea Level Anomalies and Extreme Water Levels along the European Coasts	T. Fernández Montblanc et al.
11:50	Vertical land motion reconstruction reveals nonlinear effects on relative sea level	J. Oelsmann et al.
12:10	Sea-Level Change Along the Norwegian Coast Between 2003 and 2018 From Satellite Altimetry, Tide Gauges, Hydrography, and Satellite Gravimetry	F. Mangini et al.

<b>12:30-14:00</b>	<b>Lunch</b> (University of Cádiz canteen is available at 13:00, not before)	
	<b>SESSION 3: Synergistic, Climate Studies &amp; Operationalisation (cont'd)</b>	<b>Chairs: Xiaoli Deng and Laura Ruiz-Etcheverry</b>
14:00	Sea level along the world's coastlines can be measured by a network of virtual altimetry stations	A. Cazenave et al.
14:20	Baltic SEAL: New insights into the mean and variability of the sea level in the Satellite Altimetry era	M. Passaro et al.
14:40	Dual-band altimetry from the Copernicus CRISTAL mission: Its capabilities for coastal altimetry	P. Cipollini et al.
<b>15:00-16:00</b>	<b>SESSION 3 - Discussion</b>	<b>Chairs: Nicole Delpeche-Ellmann, Guoqi Han, Marie-Isabelle Pujol, Julius Oelmann, Xiaoli Deng and Laura Ruiz-Etcheverry</b>
<b>16:00-16:30</b>	<b>Coffee Break</b>	
<b>16:30-18:00</b>	<b>POSTER SESSION</b>	

	<b>SESSION 4: Wave &amp; Wind</b>	<b>Chairs: Sonia Ponce de Leon and Lotfi Aouf</b>
9:00	On the assimilation of directional wave spectra in coastal wave model: Upgrade of CMEMS-IBI	L. Aouf et al.
9:20	Satellite Altimetry-Based Calibration of the Nearshore Wave Model SWAN and Assessment of Spectral Wave Climate in the Black and Azov Seas	K. Amarouche et al.
9:40	Assessment of renewable wave energy resources in the French façade coastal zone using high-resolution altimetry products	S. Ponce de Leon et al.
10:00	Improving estimates of significant wave height in coastal zones from Sentinel 3 SAR altimetry using a data driven method (RiwiSAR-SWH)	M. Tourian et al.
10:20	Synergy between in situ and high resolution model data to validate high resolution significant wave height altimeter measurements in the coastal zone	G. Dodet et al.
10:40	Ocean waves observation from space: Complementary approach from nadir, CFOSAT-SWIM and SAR wave mode systems	A. Ollivier et al.
<b>11:00-11:20</b>	<b>Coffee Break</b>	
<b>11:20-11:40</b>	<b>SESSION 4 - Discussion</b>	<b>Chairs: Sonia Ponce de Leon and Lotfi Aouf</b>

<b>11:40-13:00</b>	<b>Closing Session</b>	<b>Chairs: Jérôme Benveniste and Marco Restano</b>
11:40-12:20	Recommendation Reports from all Session Chairs (10' each)	
12:20-13:00	Final Discussion on Recommendations and Closing Remarks	
<b>13:00-14:30</b>	<b>Lunch</b> (University of Cádiz canteen is available at 13:00, not before)	
<b>14:30-16:30</b>	<b>EUMETSAT training on Sentinel-6 Mission and Datasets</b>	

## POSTERS SESSION

1	Assessment of Coastal Changes in Tuktoyaktuk Peninsula (Canada) using Remote Sensing: General Framework	Bernardo Costa
2	A phase error in Sentinel-3 Individual Echoes, and how to correct the error in post processing	Stefano Vignudelli
3	Altimetry Marine Products at EUMETSAT: Towards operational coastal products	Cristina Martin Puig
4	DUACS DT-2021 Reprocessed Altimetry Improves The Sea Level Retrieval In The Coastal Band Of The European Seas	Antonio Sanchez-Roman
5	Ocean state reconstructions through remote-sensing, in-situ sparse observations and Deep Learning	Eugenio Cutolo
6	Evaluation of ICESat-2 ALT13 Inland Water Surface Height over Dez and Karkheh Dams	Abdolnabi Abdeh Kolahchi
7	Mapping Elevation and Elevation Changes in the German Coastal Zone	Ludwig Schröder
8	Estimating Greenland Ice Sheet melt with coastal altimetry	Ian Fenty
9	Virtual altimetry tide gauges for sea level monitoring in the Gulf of Guinea	Djeumeni Noubissie Lucrèce
10	The Role of the Applied Science User Community in Advancing Coastal Applications from Satellite Altimetry Measurements	Margaret Srinivasan
11	Could Sea Level Rise Cause Coastal Erosion on Turkey's Northern and Southern Coasts?	Muharrem Hilmi Erkoç

## POSTERS SESSION

12	Portagauge and Satellite Sea level monitoring system for the Southwest Indian Ocean – PASS-SWIO	David Cotton
13	An improved ship detection scheme experimented on Sentinel 3 – SRAL data: An approach based on robust statistics	Andrea Scozzari
14	Coastal Sea State Uncertainty From a Triple Collocation Analysis of Observations During the Sentinel-6 Michael Freilich – Jason-3 Tandem Phase Experiment	Ben Timmermans
15	Benefits of coastal altimetry for empirical ocean tidal models	Michael Hart-Davis
16	Combining coastal altimetry and optical remote sensing to quantify drivers of coastline migration in the Wadden Sea	Benedikt Aschenneller
17	Coastal Sea Level Change Near Greenland and Implications for the Mean Dynamic Topography	Tadea Veng
18	An Improved of Satellite Altimetry Data Processing Along the Algerian Coast	Ali Rami
19	Evaluation of Retracked Sea Levels from Jason-2 Altimetry in Halmahera Sea, Indonesia	Maya Eria Sinurat
20	New Advances in Altimetry Towards the Coast :Example of the CTOH Coastal Sea Level Products	Fabien Léger
21	Coastal Low Resolution Mode Sea Level Data From CryoSat-2 on the Entrance to the Gulf of California	Jonathan Valle Rodriguez

## POSTERS SESSION

22	Comparison Between Copernicus Sentinel-3B SRAL Altimetry and Tide Gauge Records in the Antarctic Coasts	Olga Luengo Sánchez
23	Performance of Sentinel-3A SRAL on the Shelf of the Northwest Atlantic	Anrijs Kristians Abele
24	Sentinel-6: SAR improvements over LRM in the coastal zone	Fernando Niño
25	Contribution of CryoSat-2, multi-mission synergies and AI methods to observe coastal current intrusions over the North-Western Mediterranean Sea	Alice Carret
26	Assessment of coastal altimetry data along the coast of California	Angelica Rodriguez
27	Integrating satellite altimetry, tide gauge and GPS data for regional sea level studies	Francesco De Biasio
28	Comparison of in-situ measurements with satellite altimetry data and GLORYS reanalysis outputs in the Patagonia continental shelf along 44.7°S	Loreley Lago
29	Towards a better knowledge of the coastal breezes in the Gulf of Cádiz: Some advances from observations and models	Carlos Román-Cascón
30	GNSS Survey for Geoid Mapping in a Macrotidal Sea Involving Marine USV, Buoys and Hydrodynamic Modeling (Pertuis Charentais, France)	Yann-Treden Tranchant



**POSTERS SESSION**

31	Barrier-Lagoon Coasts of the Svalbard Archipelago – 85 Years of Coastline Changes (1936-2021)	Zofia Owczarek
32	Ship-borne SSH Measurements Using GNSS-R	Kaoru Ichikawa
33	SAR, SARin, RDSAR and FF-SAR Altimetry Processing on Demand for Cryosat-2, Sentinel-3 & Sentinel-6 at ESA's Altimetry Virtual Lab	Marco Restano
34	The BRAT and GUT Couple: Broadview Radar Altimetry and GOCE User Toolboxes	Marco Restano

Detailed logistic and scientific information  
can be found at: [www.coastalaltimetry.org](http://www.coastalaltimetry.org)



Link to the Coastal Altimetry Community: [www.coastalt.eu](http://www.coastalt.eu)