Third Space for Hydrology Workshop

Surface Water Storage and Runoff: Modeling, In-Situ data and Remote Sensing

15-17 September 2015

ESA-ESRIN, Frascati (Rome), Italy

Version 9 - 11 September 2015

						ID
			Day 1, Tuesday 15 September 2015			
08:15	09:00	45	Registration			
09:00			**Opening Session**	**Chairs: Jérôme Benveniste, Jean-François Crétaux**		
09:00	09:15	15	Welcome	D-EOP, H/EOP-S or Jérôme Benveniste	European Space Agency	
09:15	09:30	15	Workshop Objectives	J.-F. Crétaux, Selma Cherchali and J. Benveniste	CNES, CNES and ESA	
09:30	09:50	20	The Surface Water Ocean Topography Mission (1): Capabilities for Hydrology	Philip Callahan, Ernesto Rodriguez, Daniel Esteban-Fernandez, Parag Vaze		75
09:50	10:10	20	New Characterization of SAR Mode Altimetry Data over Inland Waters	Nicolas Bercher and Pierre Fabry		84
10:10	10:40	30	Coffee Break			
10:40			**Session 1: Space Techniques**	**Chairs: Philippa Berry, Nicolas Bercher**		
10:40	11:00	20	The potential study of the spatial and temporal hydrological variability of French rivers and estuaries from the SWOT satellite	Benoit Laignel, Laetitia Chevalier, Imen Turki, Florent Lyard		33
11:00	11:20	20	Inland water analysis of Cryosat2 FBR data within CRUCIAL	Philip Moore, Philippa Berry, Stephen Birkinshaw, Robert Balmbra, Salvatore Dinardo, J. Benveniste		64
11:20	11:40	20	The potential of CryoSat-2 SAR mode data for lake level estimation	Karina Nielsen, Lars Stenseng, Ole Andersen, Heidi Villadsen, Per Knudsen		63
11:40	12:00	20	Exploitation of the delay/Doppler altimeter high performances over inland water domain	Pierre Thibaut, Thomas Moreau, Franck Mercier, Jérémie Aublanc		57
12:00	12:20	20	From Cryosat-2 to Sentinel-3 – Retrieval of River System Heights	Philippa A.M. Berry, Mark Salloway, Robert Balmbra, Richard Smith, Jérôme Benveniste		47
12:20	12:40	20	*Discussion*			
12:40	14:00	80	Lunch			
14:00			**Session 2: Space Techniques (cnt'd)**	**Chairs: Ole Andersen, Philip Callahan**		
14:00	14:20	20	Spatial resolution and error estimate of GRACE temporal gravity field models	Sean Bruinsma, Jean-Michel Lemoine, Paoline Prevost		28
14:20	14:40	20	Water storage variations at different temporal scales derived from GRACE data by wavelet-based multi-resolution representation (MRR) and principal component analysis (PCA)	Gerhard Ressler, Michael Schmidt, Florian Seitz, C. K. Shum, Kun Shang		22
14:40	15:00	20	Water bodies mapping with SWOT: what can we learn from GPM mission and the legacy of SAR imagery?	Romain Husson, Nicolas Longepe, François Soulat, Alexis Mouche, Guillaume Hajduch, Pierre Dubois		45
15:00	15:20	20	Generation and use of SAR Images derived Water Masks in Altimetry and Hydrology	Pierre Fabry and Nicolas Bercher		82
15:20	15:40	20	*Discussion*			
15:40	16:10	30	Coffee break			
16:10			**Session 3: Space Techniques (cnt'd) - 15**	**Chairs: Mohammed Tourian , Augusto Getirana**		
16:10	16:30	20	Surface Water Derivation with WaMaPro to support hydrological Applications	Juliane Huth, Claudia Kuenzer		74
16:30	16:50	20	Multi-satellite-derived surface and sub-surface water storage variations at river basin to global scales	Fabrice Papa, F. Frappart, C. Prigent, F. Aires, A. Guntner, A. Getirana, V. Vuruputur		76
16:50	17:10	20	Innovative Retracking Strategies for Complex Radar Echoes Over Continental Water Bodies	Franck Mercier, Adalbert Arsen, Pierre Thibaut, Jean-Christophe Poisson, Fanny Piras		77
17:10	17:30	20	*Discussion*			
17:30	18:30	60	**Poster Session**			
18:30	19:30	60	Ice Breaker Reception			

			Day 2, Wednesday 16 September 2015			
08:30			**Session 4: Space Techniques (cont'd) - 16**	**Chairs: Angelica Tarpanelli , Jérôme Benveniste**		
08:30	08:50	20	Synergy of in situ and multi-mission satellite altimetry: dealing with systematic biases and river slope estimations	Nicolas Bercher, Pierre Fabry		83
08:50	09:10	20	Towards global river bathymetry estimate at 15m resolution using fusion of free remote sensing datasets, Google Earth Engine and geomorphological assumptions	Gennadii Donchyts, H. Winsemius, J. Schellekens, N. van de Giesen, Y. Huismans, D. Yamazaki		87
09:10	09:30	20	A Kalman Filter approach to estimate river discharge using multi-mission altimetric water level time series	Mohammad J. Tourian, Nico Sneeuw		44
09:30	09:50	20	Using satellite rainfall (TRMM) to estimate inundation flowpaths	Pedro Paredes-Victoria, Miguel Rico-Ramirez		53
09:50	10:10	20	*Discussion*			
10:10	10:40	30	Coffee Break			
10:40			**Session 5: Monitoring Spatio-temporal Changes from Space: Applications to Water Resources Management**	**Chairs: Jean-François Crétaux**		
10:40	11:00	20	Thematic Exploitation Platform for Hydrology	Bernat Martinez, Benjamin Koetz, Peggy Fischer, Alessandro Marin		49
11:00	11:20	20	Flood extent mapping service in the Hydrology Thematic Exploitation Platform	Fifame Koudogbo, Pablo Blanco, Laia Romero		81
11:20	11:40	20	Hydraulic model calibration by using satellite altimetry: comparison of different products	Alessio Domeneghetti, A. Tarpanelli, M. Tourian, L. Brocca, T. Moramarco, A. Castellarin, N. Sneeuw		52
11:40	12:00	20	Operational Use of Satellites for Managing African Water Basins - A case of Small Reservoirs in the Volta basin	Frank Annor, Ali Abbasi, Dirk Eilander, Nick van de Giesen		80
12:00	12:20	20	How much does each part of a watershed contribute annually to hydropower production?	Carlos Ribeiro, D. Mounts, S. Menezes, A. Santos, A. Lorenzon, D. Oliveira Filho		26
12:20	12:40	20	*Discussion*			
12:40	14:00	80	Lunch			
14:00			**Session 6: Modelling and Assimilation**	**Chairs: Julius Wellens-Mensah**		
14:00	14:20	20	Stem Drag Coefficient Calculation Using Uniform and Non-Uniform Assumption of Flow	cansu özyaman, cahit yerdelen, ali mahdavi mazdeh		96
14:20	14:40	20	Evaluation of explicit solution scheme of the two-dimensional overland flow model	Muthiah Perumal, Ravi Shakya		78
14:40	15:00	20	Estimation of river discharge from in-situ and remote sensing data, using variational data assimilation and a full saint-venant hydraulic model	Hind Oubanas, Igor Gejadze, Pierre-Olivier Malaterre, Franck Mercier		25
15:00	15:20	20	Potential value of satellite-based stream level observations to calibrate hydrological models	Jan Seibert		29
15:20	15:40	20	*Discussion*			
15:40	16:10	30	Coffee break			
			Session 7: Modelling and Assimilation (cnt'd)	**Chairs: Vincent Haefliger**		
16:10	16:30	20	Combining Envisat type and CryoSat-2 altimetry to inform hydrodynamic models	Raphael Schneider, P. Nygaard Godiksen, M.-E. Ridler, H. Villadsen, H. Madsen, P. Bauer-Gottwein		24
16:30	16:50	20	Assimilation of virtual SWOT river water elevations in a regional hydrometeorological model	Vincent Häfliger		42
16:50	17:10	20	River discharge assessment at ungauged river sites by using water level time series derived by altimetry products: the case study of the Danube River	Angelica Tarpanelli, Luca Brocca, Silvia Barbetta, Tommaso Moramarco		48
17:10	17:30	20	*Discussion*			
17:30	18:30	60	**Poster Session (continued)**			
19:45			Dinner (no host)			

			Day 3, Thursday 17 September 2015			
08:30			**Session 8: Modelling and Assimilation (cnt'd)**	**Chairs: Selma Cherchali**		
08:30	08:50	20	EarthLab Water Services	Sylvain Capo, Christelle Barbey		73
08:50	09:10	20	River discharge estimation using effective River width: A comparison between Landsat and MODIS images	Omid Elmi, Mohammad J. Tourian, Nico Sneeuw		86
09:10	09:30	20	Actual evapotranspiration estimation from rainfall-runoff budget and satellite observation (SEBS and LSA SAF) application to the Medjerda basin Tunisia	Zoubeida Bargaoui, Nesrine Abid, Chris M. Mannaerts		88
09:30	09:50	20	Introduction of a modified soil heat flux approach and its potential for improving remote sensing based surface energy balance	Patrick Knöfel		32
09:50	10:10	20	*Discussion*			
10:10	10:40	30	Coffee Break			
10:40			**Session 9: Modelling and Assimilation (cnt'd)**	**Chairs: Selma Cherchali**		
10:40	11:00	20	2D hydrodynamics of Pearl River Estuary using D-Flow Flexible Mesh	LI LI, Qinghua Ye, Jürgen Böhner		68
11:00	11:20	20	Water storage monitoring in the Yangtze River's connecting lakes based on 15 years of DRAGON EO imagery, altimetry time series and field measurements	Yesou Herve, et al.		89
11:20	11:40	20	Passu Glacial Lake Outburst Flood (GLOF) Mapping	Arjumand Zaidi, Muhammad Siddiqui		35
11:40	12:00	20	Improving flood predictions via sequential assimilation of SAR-derived inundation extent maps	Renaud Hostache, Laura Giustarini, Patrick Matgen, Marco Chini, Melissa Wood, Giovanni Corato		91
12:00	12:20	20	Toward the use of the SWOT data to improve hydrological global-scale modeling	Charlotte Emery, S. Biancamaria, A. Boone, S. Ricci, P.-A. Garambois, B. Decharme		41
12:20	12:40	20	*Discussion*			
12:40	14:00	80	Lunch			
14:00			**Session Summaries from Chairs, Discussion and Closing Remarks**	**Chairs: Jérôme Benveniste, Jean-François Crétaux**		
14:00	14:15	15	Space Techniques	Chairs		
14:15	14:30	15	Monitoring Spatio-temporal changes from space	Chairs		
14:30	14:45	15	Modelling and Assimilation	Chairs		
14:45	15:15	30	Round Table Discussion	Stephan Bojinski, Christophe Cudennec, Selma Cherchali & Christophe Brachet		
15:15	15:45	30	Plenary discussion and recommendations	All		
15:45	16:00	15	Closing discussion and wrap-up	Jérôme Benveniste and Jean-François Crétaux		
16:00	16:00	0	End of Workshop			

		Poster Sessions - Scheduled on day 1 Tuesday 15 September 17:30-18:30, day 2 Wednesday 16 September 17:30-18:30		
		Title	author	
		Session P1: Space Techniques	**Chairs: N Bercher, O Andersen, P Callahan, M Tourian**	
	1	EGSIEM - a new Horizon2020 project to improve accessibility to gravity field products for hydrology	Sean Bruinsma et al.	27
	2	Groundwater Changes In The Amazon Basin From Multi-Satellite Observations And Hydrological Models	Frédéric Frappart, F. Papa, J. Tomasella, G. Ramillien, A. Guentner, T. Emilio, J. Schietti, J. Carvalho, L. Se	79
	3	HYSOPE : an operational processing center for lakes and rivers observation	Philippe Pacholczyk, Jean-Francois Cretaux, Marie-Claude Gennero, Stephane Calmant	94
	4	ArcGIS software for Flood risk management in response on Climate Change in Georgia	Kakha Nadiradze	16
	5	Effects of land use land cover changes on stream flow	Dawd Temam	17
	6	Climate Change Impact on Variability of Rainfall Intensity in Upper Blue Nile Basin	Lakemariam Yohannes Worku	20
	7	MAPS: the Multi-mission Altimetry Processing Software	Frédéric Frappart, Vincent Marieu, Stéphane Calmant, Frédérique Seyler	59
	8	Surface Soil Moisture from SRAL Satellite Radar Altimetry	Philippa A.M. Berry, Robert Balmbra	71
	9	Inland Water Masking and its role in successful inland water height retrieval	Richard Smith, Philippa Berry, Mark Salloway	54
	10	Determining cross sections of small water courses using LiDAR point data	Jennifer Roelens, Jos Van Orshoven, Jan Diels, Stefaan Dondeyne, Seppe Deckers	43
	11	Water surface and volume monitoring with the future SWOT mission: Generation and use of DEM	laurence fruteau	58

12	Using the Hooking Effect in satellite altimetry data for water level time series estimation over smaller rivers in the Mekong basin	Eva Boergens, Christian Schwatke, Denise Dettmering, Florian Seitz	37
13	Classification of altimeter waveforms for an improved estimation of water level time series over inland water	Christian Schwatke, Denise Dettmering, Franziska Göttl, Eva Börgens	39
14	Determination and Evaluation of Land surface temperature using MODIS imagery in northern of Iran	Mirhassan Miryaghoubzadeh, Kaka Shahedi	55
15	Flood Dynamics In The Guayas Watershed (Ecuatorian Pacific Coast) Using ENVISAT ASAR Images (2005-2008)	Frédéric Frappart, Luc Bourrel, Ximena Riofrio Salazar, Frédéric Baup, José Darrozes, Pombosa Rodrigo	61
16	EUMETSAT Hydrological Satellite Application Facility, Precipitation Products Generation System at C.N.M.C.A.	Daniele Biron, Davide Melfi, Francesco Zauli	65
17	Long-term solar and hydroclimatological trends	Bakhram Nurtaev	46
18	Retrieving river geometry from altimetry-based rating curves	Adrien Paris et al.	62
19	Preparing take-up of copernicus sentinel-3 land data	Camille Pelloquin, Karina Nielsen, Philippa Berry, Antonio Reppucci, Thomas Moreau, Per Knudsen	69
20	Radar Altimetry Toolbox	Albert Garcia-Mondejar et al.	70
21	Satellite-derived surface water storage in the Congo basin	Melanie Becker, S. Bejannin, F. Papa, S. Calmant, F. Frappart, J. Santos da Silva	67
22	SWOS - Satellite-based Wetland Observation Service	Eric Mino	999

	Session P2: Monitoring Spatio-temporal Changes from Space	**Chairs: Jean-François Crétaux**	
23	River discharge estimation along the Po River from densified water level time series of multi-mission satellite altimetry spatially and temporally	Mohammad J. Tourian, Omid Elmi, Angelica Tarpanelli, Luca Brocca, Tommaso Moramarco, Nico Sneeuw	40
24	Improving agricultural water resources allocation through the assessment of crop classification and acreage using remote sensing images	Fadi Karam, Nabil Amacha	97
25	Assessment of Ground water potential using Multi criteria analysis - A Geospatial Approach (A case Study of Kattankulathur Block, Tamil Nadu, India)	Sachikanta Nanda, Annadurai R	21
26	The Assessment of the most extreme Values' Changes of Marmarik River's Flow (in Hankavan Villige) for Spring Floods on the Context of Global Climate Change	Varduhi Margaryan	36
27	Satellite altimetry derived water level changes in poorly gauged river basins of Southern Africa	Luiz Guerreiro Lopes, Joecila Santos da Silva, Stéphane Calmant	60
28	Web application for the visualization and spatio-temporal analysis of space-based hydrological products	Alex Lopez, Isabel Polo, Joan Sala, Xavier Banqué, Fifame Koudogbo, Laia Romero, Franck Mercier	85

	Session P3: Modelling and Assimilation	**Chairs: V Haefliger, J Wellens-Mensah, S Cherchali**	
29	Daily Flow Simulation by Using Continuous Rainfall-Runoff Model	Mohammad reza Goodarzi, Alireza Amidian	30
30	Geospatial Modeling for Demarcation of Groundwater Potential Zone Using WIO and CIS Techniques in Kallar Watershed, South India.	Kumar G	18
31	Assessment of the effects of water harvesting technology on downstream water availability using SWAT model, Case of Alaba Special Woreda, Ethiopia.	Ayalkinet Mekonnen Seka, Adane Abeb Awass	19
32	Daily Discharge Forecasting Using Local Linear Model Trees (LOLIMOT)	miahd moharrampour	31
33	Utilising the next generation of satellite mission data in the ECMWF NWP system and the EFAS and GloFAS flood models	Calum Baugh, Patricia de Rosnay, Florian Pappenberger	50
34	Model to estimate the erosion in northern Algeria	MEDDI Mohamed	90
35	Determination of areas of possible settlements submergence during flooding from the rivers of Prykarpattya using satellite data	Valeriya Ovcharuk, Eugene Gopchenko, Eugene Boyarintsev, Eugene Hritsenko	92
36	Advances in integrating reservoir operation in a global surface water dynamic modeling framework	Augusto Getirana, Jamon Van Den Hoek, Hahn Chul Jung, Christa Peters-Lidard	93
37	Actual evapotranspiration estimation using SEBAL algorithm (Case study: Tamar river basin, Iran)	Mirhassan Miryaghoubzadeh, Kaka Shahedi	56
38	Comparative study on two run-off method (SCS-CN & CWC) for Micro watershed wise surface water storage of Kansachara sub watershed, Dwarakeswar system through Geoinformatics	Kartic Bera, Jatisankar Bandyopadhyay	72