

Frédéric Frappart
GET - OMP
14, Avenue Edouard Belin
31400 Toulouse, France
☎ : (33) 5 61 33 26 63
✉ frederic.frappart@get.obs-mip.fr
<http://fredericfrappart.weebly.com>

Engineer and Doctor in Geophysics and Remote Sensing

French
34 years old
Married, 1 child
French driving
license

SKILLS

Data processing and analysis

- Signal processing
- Image processing
- Estimation of geophysical parameters derived from remote sensing (Altimetry, Gravimetry, Optical & Radar Imagery)
- Statistics
- Geostatistics

Applied Mathematics

- Data assimilation
- Kalman filtering
- Wavelet analysis
- Inverse methods

Hydrology

- Water balance assessment
- Hydrological modeling
- Hydrodynamical modeling

Informatics

- Linux, Unix, Windows
- C/C++, Java, Fortran, Visual Basic, shell, Perl
- Matlab, IDL, ENVI, R, GMT, Maple
- ArcGIS, MapInfo, Géoconcept, MySQL, Access
- PHP, HTML
- Office, Latex, GIMP, Photoshop

Management

- Co-Management of the HYBAM Environmental Research Observatory
- Management of scientific projects
- Training periods supervision

LANGUAGES

French (mother tongue)
English (fluent)
Spanish (fluent)
Italian (notions)
Portuguese (notions)

SPARE-TIME ACTIVITIES

Basket-ball, karate, hiking
Photography, astronomy

PROFESSIONAL EXPERIENCES (9 years)

Since September 2010 : Géosciences Environnement Toulouse (GET), Toulouse, France

ASSOCIATE PROFESSOR (OBSERVATOIRE MIDI-PYRENEES)

April 2010 – August 2010 : Laboratoire des Mécanismes et Transferts en Géologie (LMTG), Toulouse, France

POST-DOCTORAL RESEARCHER (IRD)

Water and sediments balance of the Amazon floodplains – CARBAMA project

October 2008 – March 2010 : LMTG, Toulouse, France

POST-DOCTORAL RESEARCHER (RTRA-STAE)

Inversion and assimilation of remotely sensed observations in hydrological, hydrodynamical and biogeochemical models – CYMENT project

October 2007 – September 2008 : Centre d'Etudes Spatiales de la Biosphère (CESBIO), Toulouse, France

POST-DOCTORAL RESEARCHER (CNRS)

Analysis of interannual and decadal variations of rainfall in West Africa – AMMA Program

July 2006 – June 2007 : Department of Earth System Science (ESS) at University of California, Irvine (UCI), USA

POST-DOCTORAL RESEARCHER (NASA)

Study of the continental phase of the water cycle using remote sensing – NEWS (NASA Earth Water Cycle Sponsored Research) project

November 2005 – April 2006 : Laboratoire d'Astrophysique de Toulouse (Equipe Instrumentation, Signal et Image) et Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), Toulouse, France

RESEARCH ENGINEER (CNRS)

Preparation of the SMOS mission (ESA) and application of remote sensing for land hydrology

October 2002 – October 2005 : LEGOS/LMTG, Toulouse, France

PhD STUDENT (CNES/ALCATEL SPACE)

Development of applications of remote sensing for land hydrology – implication in the validation of the measurements from the altimeter onboard ENVISAT for ESA and for the Contribution of Satellite Altimetry for Hydrology project

EDUCATION

2006 : PhD in Geophysics and Remote sensing

Hydrology from space : Development of applications of remote sensing for continental hydrology, University Paul Sabatier, Toulouse, France. Supervised by Dr. Anny Cazenave (CNES) and Dr. Frédérique Seyler (IRD)

2002 : Master of research : Ocean, Atmosphere and Environment, University Paul Sabatier, Toulouse, France.

2001 : Engineer from Ecole Nationale Supérieure des Techniques Avancées de Bretagne (ENSTA Bretagne, ex ENSIETA), Brest, France.

1999 : Bachelor of Physics, University Bordeaux I, France.

TEACHING ACTIVITIES

2010-2011 : Geographic Information System and Digital Elevation Models, Master of Earth and Environmental Sciences, 1st year (58.5h), Université Paul Sabatier, Toulouse, France.

Image processing for geomorphology, Bachelor of Earth and Environmental Sciences, 3rd year (23h), University Paul Sabatier, Toulouse, France.

Radar Altimetry, Master of Environmental Engineering, 2nd year (3h), Université Paul Sabatier, Toulouse, France.

Radar Altimetry, Master of Earth Remote Sensing and Observations Systems, 2nd year (4.5h), Institut Supérieur de l'Aéronautique et de l'Espace, Toulouse, France.

Hydrology of the Amazon basin, Master of Earth Remote Sensing and Observations Systems, 2nd year (4.5h), Institut Supérieur de l'Aéronautique et de l'Espace, Toulouse, France.

2008-2009: Image processing for geomorphology, Bachelor of Earth and Environmental Sciences, 3rd year (63h), Université Paul Sabatier, Toulouse, France.

2004-2005: Office automation, Bachelor of Bioengineering, 1st year (32h), Université Paul Sabatier, Toulouse, France.

2003-2004: Office automation, Bachelor of Physical Measurements, 1st year (32h), Université Paul Sabatier, Toulouse, France.

SCIENTIFIC PAPERS (20 - h-index=11 ; times cited=275)

- Betbeder J., Gond V., **Frappart F.**, Baghdadi N., Briant G., Bartholomé E. Landscape wetland mapping using a multisensor approach, *Remote Sensing of Environment*, to be submitted.
- Bergmann I., Ramillien G., **Frappart F.** Climate-driven interannual variations of the mass balance of Greenland, *Global and Planetary Change*, submitted.
- Ramillien G., Seoane L., **Frappart F.**, Biancale R., Gratton S., Vasseur X., Bourgogne S. Constrained regional recovery of continental water mass time-variations from GRACE-based geopotential anomalies, *Geophysical Journal International*, submitted.
- Grippa M., Kergoat L., **Frappart F.**, Araud Q., Boone A., de Rosnay P., Lemoine J-M., Gascoin S., Balsamo G., Otlé C., Decharme B., Saux-Picart S., Ramillien G. (2011). Land water storage over West Africa estimated by GRACE and land surface models, *Water Resources Research*, 47, W05549, doi: 10.1029/2009WR008856. IF 2009: 2.447, Cited: 0.
- **Frappart F.**, Papa F., Güntner A., Werth S., Santos da Silva J., Seyler F., Prigent C., Rossow W.B., Calmant S., Bonnet M-P. (2011). Satellite-based estimates of groundwater storage variations in large drainage basins with extensive floodplains, *Remote Sensing of Environment*, 115(6), 1588-1594, doi: 10.1016/j.rse.2011.02.003. IF 2010: NA, Cited: 0.
- Baup F., Mougin E., de Rosnay P., Hiernaux P., **Frappart F.**, Frison P-L, Zribi M., Viarre J. (2011). Mapping surface soil moisture over the Gourma mesoscale site (Mali) by using ENVISAT ASAR data, *Hydrology and Earth System Sciences*, 15(2), 603-616, doi:10.5194/hess-15-603-2011. IF 2010: NA, Cited: 0.
- Biancamaria S., Cazenave A., Mognard N.M., Llovel W., **Frappart F.** (2011). Satellite-based high latitudes snow volume trend, variability and contribution to sea level over 1989/2006, *Global and Planetary Change*, 75(3-4), 99-107, doi: 10.1016/j.gloplacha.2010.10.011. IF 2010: NA, Cited: 1.
- **Frappart F.**, Ramillien G., Famiglietti J.S. (2011). Water balance of the Arctic drainage system using GRACE gravimetry products, *International Journal of Remote Sensing*, 32(2), 431-453, doi: 10.1080/01431160903474954. IF 2009: 1.089. Cited: 3.
- **Frappart F.**, Ramillien G., Leblanc M., Tweed S.O., Bonnet M-P., Maisongrande P. (2011). An independent Component Analysis approach for filtering continental hydrology in the GRACE gravity data, *Remote Sensing of Environment*, 115(1), 187-204, doi: 10.1016/j.rse.2010.08.017. IF 2010: NA. Cited: 1.
- **Frappart F.**, Papa F., Güntner A., Werth S., Ramillien G., Prigent C., Rossow W.B., Bonnet M-P. (2010). Interannual variations of the terrestrial water storage in the Lower Ob' basin from a multisatellite approach, *Hydrology and Earth System Sciences*, 14(12), 2443-2453, doi: 10.5194/hess-14-1-2010. IF 2010: NA, Cited: 1.
- **Frappart F.**, Ramillien G., Maisongrande P., Bonnet M-P. (2010). Denoising satellite gravity signals by Independent Component Analysis, *IEEE Geosciences and Remote Sensing Letters*, 7(3), 421-425, doi:10.1109/LGRS.2009.2037837. IF 2009: 1.379. Cited: 1.
- Mougin E. Hiernaux P., Kergoat L., de Rosnay P., Grippa M., Timouk F., Arjounin M., Le Dantec V., Demarez V., Ceschia E., Mougénot B., Baup F., **Frappart F.**, Frison P-L., Gardelle J., Gruhier C., Jarlan L., Mangiarotti S., Sanou B., Tracol Y., Guichard F., Trichon V., Diarra L., Soumaré A., Koité M., Dembélé F., Lloyd C., Hanan N.P., Damesin C., Delon ., Serça D., Galy-Lacaux C., Seghiéri J., Becerra S., Dia H., Gangneron F., Mazzega P. (2009). The AMMA-CATCH Gourma observatory site in Mali: Relating climate variations to changes in vegetation, surface hydrology, fluxes and natural

resources, *Journal of Hydrology*, 375(1-2), 14-33, doi:10.1016/j.jhydrol.2009.06.045. IF 2009: 2.433. Cited: 18.

- **Frappart F.**, Hiernaux P., Guichard F., Mougin E., Kergoat L., Arjounin M., Lavenu F., Koité M., Paturol J-E., Lebel T. (2009). Rainfall regime over the Sahelian climate gradient in the Gourma, Mali, *Journal of Hydrology*, 375(1-2), 128-142, doi:10.1016/j.jhydrol.2009.03.007. IF 2009: 2.433. Cited: 11.
- **Frappart F.**, Papa F., Famiglietti J.S., Prigent C., Rossow W.B., Seyler F. (2008). Interannual variations of river water storage from a multiple satellite approach: a case study for the Rio Negro River basin, *Journal of Geophysical Research*, 113(D21), D21104, doi:10.1029/2007JD009438. IF 2007: 2.953. Cited: 14.
- Papa F., Güntner A., **Frappart F.**, Prigent C., Rossow W.B. (2008). Variations of surface water extent and water storage in large river basins: A comparison of different global data sources, *Geophysical Research Letters*, 35(11), doi:10.1029/2008GL033857. IF 2008: 2.959. Cited: 13.
- Wilson M.D., Bates P.D., Alsdorf D., Forsberg B., Horrit M., Melack J., **Frappart F.**, Famiglietti J.S. (2007). Modeling large-scale inundation of Amazonian seasonally flooded wetlands, *Geophysical Research Letters*, 34(15), L15404, doi:10.1029/2007GL030156. IF 2007: 2.744. Cited: 12.
- **Frappart F.**, Do Minh K., L'Hermitte J., Cazenave A., Ramillien G., Le Toan T., Mognard-Campbell N. (2006). Water volume change in the lower Mekong basin from satellite altimetry and imagery data, *Geophysical Journal International*, 167 (2), 570-584, doi:10.1111/j.1365-246X.2006.03184.x. IF 2005: 1.826. Cited: 18.
- Ramillien G., **Frappart F.**, Güntner A., Ngo-Duc T., Cazenave A., Laval K. (2006). Time variations of the regional evapotranspiration rate from Gravimetry Recovery And Climate Experiment (GRACE) satellite gravimetry, *Water Resources Research*, 42(10), W10403, doi:10.1029/2005WR004331. IF 2005: 1.939. Cited: 20.
- León J.G., Calmant S., Seyler F., Bonnet M-P., Cauhopé M., **Frappart F.**, Filizola N., Fraizy P. (2006). Estimation of stage-discharge rating curves and mean water depths from radar altimetry data and hydrological modelling in the upper Negro River basin, *Journal of Hydrology*, 328 (3-4), 481-496, doi: 10.1016/j.jhydrol.2005.12.006. IF 2005: 1.745. Cited: 19.
- **Frappart F.**, Calmant S., Cauhopé M., Seyler F., Cazenave A. (2006). Preliminary results of ENVISAT RA-2 derived water levels validation over the Amazon basin, *Remote Sensing of Environment*, 100(2), 252-264, doi:10.1016/j.rse.2005.10.027. IF 2005: 2.833. Cited: 42.
- **Frappart F.**, Ramillien G., Biancamaria S., Mognard N.M., Cazenave A. (2006). Evolution of high-latitude snow mass derived from the GRACE gravimetry mission (2002-2004), *Geophysical Research Letters*, 33(2), L02501, doi:10.1029/2005GL024778. IF 2005: 2.784. Cited: 19.
- **Frappart F.**, Seyler F., Martinez J.M., León J.G., Cazenave A. (2005). Floodplain water storage in the Negro River basin estimated from microwave remote sensing of inundation area and water levels, *Remote Sensing of Environment*, 99(4), 387-399, doi:10.1016/j.rse.2005.08.016. IF 2005: 2.833. Cited: 23.
- Ramillien G., **Frappart F.**, Cazenave A., Güntner A. (2005). Time variations of land water storage from the inversion of 2-years of GRACE geoids, *Earth and Planetary Science Letters*, 235(1-2), 283-301, doi: 10.1016/j.epsl.2005.04.005. IF 2004: 3.499. Cited: 59.

BOOK CHAPTERS

- Leblanc M., Tweed S., Tregonning P., Ramillien G., **Frappart F.**, Fakes A., Cartwright I.C. Groundwater change in the Murray Basin from long-term in-situ monitoring and GRACE estimates, UNESCO Blue Book Series, submitted.
- **Frappart F.**, Seyler F., Papa F., Martinez J-M., Le Toan T. Santos da Silva J., Prigent C., Rossow W.B. (2011). Monitoring of surface and ground water variations using multisatellite observations and hydrological modelling, *Earth on the edge: Science for a sustainable planet*, IAHS Publications 343, 22-27.
- Seyler F., Calmant S., Santos da Silva J., León J.G., **Frappart F.**, Bonnet M-P., Filizola N., Roux E., Cochonneau G., Zoppas Costi A-C., Oliveira E. De, Guyot J-L., Seyler P. (2009). New perspectives in monitoring water resources in large tropical transboundary basins based on the combined use of remote sensing and radar altimetry, In Blöschl, G., Van De Giesen, N., Muralidharan, D., Ren, L., Seyler, F., Sharma, U. and J. Vrba (Eds.), *Improving Integrated Surface and Groundwater Resources Management in a Vulnerable and Changing World*, IAHS Publications 330, 282-288.

CONFERENCE PROCEEDINGS

- **Frappart F.**, Papa F., Güntner A., Werth S., Ramillien G., Prigent C., Rossow W.B., Bonnet M-P. (2010). Interannual variations of the terrestrial water storage in the Lower Ob' basin from a multisatellite approach, *Towards a Water Cycle Multi-mission Observation Strategy*, Proc. of the Earth Observation and Water Cycle Science Conference, Frascati, Italy, 18-20 November 2009, ESA SP-674.
- Baup F., Mougin E., de Rosnay P., Hiernaux P., **Frappart F.**, Frison P.L., Zribi M. (2010). Mapping surface soil moisture over the Malian mesoscale site by using ENVISAT ASAR data, *Towards a Water Cycle*

Multi-mission Observation Strategy, Proc. of the Earth Observation and Water Cycle Science Conference, Frascati, Italy, 18-20 November 2009, ESA SP-674.

- **Frappart F.**, Papa F., Famiglietti J.S., Prigent C., Rossow W.B., Seyler F. (2007). Interannual Variations of River Water Storage in the Rio Negro River basin from a Multiple Satellite Approach, *Second Space for Hydrology Workshop - "Surface Water Storage and Runoff: Modeling, In-Situ data and Remote Sensing"*, Geneva, Switzerland, 12-14 November 2007, ESA WPP-280.
- Legrésy B., Papa F., Blarel F., Crétaux J-F., Birol, F., Cazenave A., Do Minh K., **Frappart F.**, Calmant S., Gennero M-C., Kouraev A., Rémy F. (2006). OSCAR : looking at continental surfaces with radar altimetry, *Proc. of the Symposium of 15 Years of Progress in Radar Altimetry*, Venice, Italy, 13-18 March 2006, ESA SP-614.
- Seyler F., Bonnet M-P., Calmant S., Cauhopé M., Cazenave A., Cochonneau G., Divol J., Do Minh K., **Frappart F.**, Gennero M-C., Guyenne-Blin K., Huynh F., León J.G., Maugeas M., Mercier F., Mercier C., Rocquelain G., Tocqueville L., Zanife O-Z. (2006). The CASH project, *Proc. of the Symposium of 15 Years of Progress in Radar Altimetry*, Venice, Italy, 13-18 March 2006, ESA SP-614.
- **Frappart F.**, Cazenave A., Seyler F., Calmant S. (2005). Comparison of the ENVISAT waveform retracers over inland waters, *Proc. of the Envisat & ERS Symposium*, Salzburg, Austria, 6-10 September 2004, ESA SP-572.
- Duchemin B., **Frappart F.**, Maisongrande P., Mougnot B., Dedieu G., Hadria R., Lahrouni A., Khabba S. (2003). Utilisation d'une série de données SPOT-HRV pour la paramétrisation du modèle STICS : application à la spatialisation du bilan hydrique en condition semi-aride (plaine du Tensift, Maroc), *Actes de la réunion STICS*, Arles, France, 23 et 24 janvier 2003, 179-184.
- Duchemin B., Maisongrande P., **Frappart F.**, Magnac M., Chehbouni A., Dedieu G., Mougnot B. (2002). Water budget with phenology derived from optical satellite data, *Proc. of the 1st International Symposium on Recent Advances in Quantitative Remote Sensing, Valencia, Spain*, J.A. Sobrino (Ed.). Publicacions de la Universitat de València, España, 177-183.

SCIENTIFIC & TECHNICAL REPORTS

- Biancamaria S., Cazenave A., Mognard N.M., Llovel W., **Frappart F.** (2010). Remotely-sensed high latitudes snow volume over the 1990-2006 period and its connection with climatic indices – Etudes du volume de neige aux hautes latitudes (1990-2006) et corrélation avec des indices climatiques, Report to Cospar 2010, World Committee on Space Research – Comité Mondial de la Recherche Spatiale, Space Science Research in France – La Recherche Spatiale en France, 38th scientific assembly, July 18-25, 2010, Bremen, Germany, CNES publications, 94-95.