EuroGOOS
European Global Ocean Observing System

EuroGOOS Annual General Assembly Meeting
21-23 May 2024
Lisbon, Portugal

Formal session

Agenda Item F8: Executive Board elections

Meeting Document F8.4: Candidate – Sebastien Legrand

natural sciences .be

EuroGOOS AISBL
Rue Vautier 29
1000 Bruxelles

Brussels, May 6th 2024

Subject: Application for the EuroGOOS Executive Directors Board

Dear EuroGOOS Members,

I am writing to express my enthusiastic desire to join the EuroGOOS Executive Directors Board. With a longstanding commitment to ocean observing and modelling and a deep engagement with EuroGOOS over the last decade, I am eager to contribute my expertise and leadership to further advance EuroGOOS objectives.

Most of you likely know me as NOOS chair, a role I have held since 2016. Additionally, I am actively involved in EuroGOOS Coastal Working Group and Science Advisory Working Group. As GOOS National Focal Point for Belgium, I represent my country in key forums including the CMEMS national marine stakeholder forum, the EOOS operations committee and the JERICO-RI nations committee. My involvement as an assessor for the Marine Strategy Framework Directive (MSFD) and for the Water Framework Directive (WFD) has led me to assess environmental impacts of marine renewable energy and to contribute to the newly established OSPAR expert group on 'Alteration of Hydrographical Conditions'. Furthermore, my expertise in acute marine pollution modelling has engaged me in various projects under the Bonn Agreement.

Through these roles, I have gained a comprehensive understanding of regional and pan-European ocean governance frameworks. I believe this perspective will complement EuroGOOS mission to facilitate collaboration across boundaries and foster communities of practices.

I am confident that my extensive experience, along with my longstanding involvement in EuroGOOS and its affiliated bodies, equips me to effectively guide EuroGOOS towards its future goals.

Thank you for considering my application. I am eager for the opportunity to contribute to the continued success of EuroGOOS.

Yours sincerely,
Sébastien Legrand

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Sébastien Legrand, PhD

Born on the 29th of June 1977, Belgian citizen
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Experience

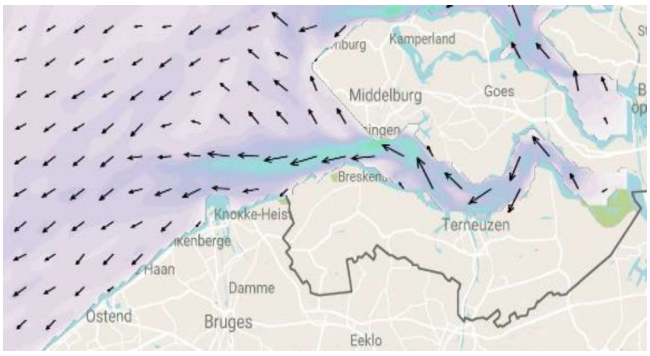
01/02/2014 – Present	Head « Marine Forecasting Centre » (MFC) , Operational Directorate « Natural Environment » (OD Nature), Royal Belgian Institute of Natural Sciences (RBINS).
01/01/2010 – 31/01/2014	Head « Operational Oceanography : Tools and Services » (OPTOS), departement « Management Unit of the North Sea Mathematical Model » (MUMM)), Royal Belgian Institute of Natural Sciences (RBINS).
15/09/2007-31/12/2009	Senior Scientist and work leader, « Operational Oceanography : Tools and Services » (OPTOS), departement « Management Unit of the North Sea Mathematical Model » (MUMM)), Royal Belgian Institute of Natural Sciences (RBINS).
12/06/2006 – 14/09/2007	Post-doc researcher, CENAERO ASBL.
01/10/2000-11/06/2006	Research and teaching assistant at the Sciences Faculty (Physics departement) and at the Louvain School of Engineering (applied mechanics and mathematics), Université catholique de Louvain (UCLouvain).
01/10/1999-30/09/2000	Research assistant at the Sciences Faculty (Physics departement), Université catholique de Louvain (UCLouvain).

Education

1999-2006	PhD student, Université catholique de Louvain, Louvain-la-Neuve. PhD Thesis entitled "***Unstructured meshes in marine modelling***", under the supervision of Prof. Eric Deleersnijder and Prof. Vincent Legat.
1999-2000	Advanced Degree in Physics (Diplôme d'études approfondies en sciences physiques), Université catholique de Louvain, Louvain-la-Neuve.
1995-1999	Master in Physics (License en sciences physiques), Université catholique de Louvain, Louvain-la-Neuve, *magna cum laude*.

A scientific career dedicated to the knowledge, protection and operational forecasting of the marine environment

Head of the Marine Forecasting Centre (2007-present)



With the help of the teams OPTOS (2007-2014) and MFC (2014-present), I develop, operate, improve, maintain and validate a complete range of mathematical models that simulate the state of the sea. Used routinely, these models compute twice-daily 5-day forecasts of different physical parameters of the North Sea such as sea surface elevation, sea currents, significant wave heights, temperature, and salinity. These forecasts are used in numerous applications to support the missions and activities of Belgian and foreign public sectors (federal, regional, marine forecasting centres of neighbouring countries, European agencies, etc.); Belgian and foreign private sectors (operators of offshore wind parks, fishing industry, aquaculture, tourism, and leisure industries, etc.); and Belgian and foreign scientific research sectors (universities and research centres).

Leading European expert in modelling and operational forecasting of maritime pollution drift, behaviour, and fate (2007-present)

As a member of the Belgian Coast Guard structure, I gained expertise in the prediction of the drift and the physicochemical fate of acute maritime pollution. I coordinated and contributed to the development of the decision support systems FLOAT, OSERIT, MANIFESTS and NOOS-Drift. Operated by the MFC, these tools are included in the Belgian North Sea Emergency Response Plan; they have also been used in European projects such as MARCOAST, BEAWARE 2, HNS-MS, IMAROS and MANIFESTS. OSERIT is also one of the components of the early warning system put in place by the European Maritime Safety Agency (EMSA) in the North Sea in the framework of the CleanSeaNet service. Throughout these different projects, I have developed multidisciplinary expertise to address issues as diverse as ecotoxicity, maritime risk analysis and the estimation and monitoring of environmental and socio-economic impacts of pollution. This expertise includes among others the development of sensitivity maps.

Environmental expert (2010-present)

As an environmental expert specialized in hydrographical condition and maritime pollution, I coordinate MSFD D7 monitoring programs and contribute to the assessments of MSFD D7 and D8 (2012, 2018, 2024) of the Belgian Waters as well as the WFD hydromorphological assessment in 2022.

A leading European expert

In the last 20 years, I have been active in many European networks, consortia, organizations and working groups. I only list below my most significant contributions

IOC / GOOS / JCOMM

- GOOS National Focal Point for Belgium (2017-present)
- Member of the JCOMM Expert Team for Maritime Environmental Emergency Response (ET-MEER)

EuroGOOS (http://www.eurogoos.eu). EuroGOOS is the European contribution to the UNESCO / IOC Global Ocean Observing System program. This organization aims inter alia to coordinate at a trans-European level all developments related to operational oceanography carried out in Europe.

- 2012-present: RBINS delegate at EuroGOOS General Assembly
- 2016-present: member of EuroGOOS Scientific Advisory Board.
- 2018-present : member of EuroGOOS Coastal Working Group

NOOS (http://www.noos.cc), the North West European Continental Shelf Operational Oceanographic System. NOOS is the regional alliance of EuroGOOS for the extended North Sea. It brings together 23 institutes and agencies active in operational oceanography in the 9 states bordering the greater North Sea.

- 2007-present: RBINS delegate, involved in many NOOS activities.
- 2009-present: Coordinator of NOOS Working Group on Drift. This working group brought together, among others, the scientists responsible for the operational modelling of the drift of oil spills in the North Sea.
- 2010-present: Member of the NOOS steering committee.
- **2016-present: NOOS chair.**

Copernicus (http://marine.copernicus.eu)

- RBINS coordinator of the MyOcean 1, 2 and 3 projects that enabled the implementation of the Copernicus Marine Environment Monitoring Service.
- Member of the CMEMS Champion User Advisory Group (2019-2022)
- Permanent delegate for Belgium to the Copernicus National Marine Stakeholder Forum (2023-present)

EOOS (https://www.eoos-ocean.eu/)

- Member of the EOOS Operation Committee (2021-present)

JERICO-RI (https://www.jerico-ri.eu/) JERICO-RI is a Joint European Research Infrastructure for Coastal Observatories, gathering 40+ Institutes from 14 different European countries.

- Member of the JERICO-RI national committee (2019-present)

Bonn Agreement (http://www.bonnagreement.org/). The Bonn Agreement is the mechanism whereby the North Sea States and the European Union work together to provide reciprocal assistance in case of maritime pollution occurring in the North Sea area.

- Regular speaker at OTSOPA, the working group of the Bonn Agreement dealing with operational, technical and scientific issues related to pollution control activities.
- Coordinator of the update of Chapter 20 of the Bonn Agreement Counter-Pollution Manual.
- Active participation in Bonn Agreement projects such as "BE-AWARE-2", “HNS-MS”, “IMAROS”, “IMAROS-2, “MANIFESTS” and “MANIFESTS-Genius”.

OSPAR

- 2024-present : Member of the OSPAR expert group on "Alteration of Hydrographical Conditions"

European Maritime Safety Agency (www.emsa.eu)

- Coordinator of several projects interfacing (two way) RBINS oil spill drift and fate models to the EMSA CleanSeaNet service. These projects lead to operational services within the framework of CleanSeaNet V1 (2009-2012) and CleanSeaNet V2 (2015-2018).

ICES (http://www.ices.dk), "International Council for the Exploration of the Sea".

- 2008: Participation in the ICES Workshop on Operational Oceanographic Products (WKOOP).
- 2008-2010: founding member of the ICES Working Group on Operational Oceanographic Products for Fisheries and Environment (WGOOFE).

Ocean Practices AISBL

- 2024-present : Member of the OSPAR expert group on "Alteration of Hydrographical Conditions" under EIHA.

Scientific projects

I give below the exhaustive list of the scientific projects to which I actively contributed.

As project coordinator

2023-2033	*Next-TIDE, a long term cooperation with UCLouvain to develop machine learning application in support of ocean forecast (including nowcasting, hybrid modelling and data assimilation) [BELSPO FED-tWIN program]*
2020-2025	*OPTOS-V3, the new generation MFC forecasting system [RBINS]*
2018-2019	*EU CMEMS tender : NOOS-Drift – a transnational multi-models ensemble system to assess and improve drift forecast accuracy in the European North West Continental Shelf Seas. [CMEMS User Uptake program]*
2015-2017	*EU (DG-ECHO) project : HNS-MS – Improving Member States preparedness to face a HNS pollution of the Marine System..*
2013-2016	*EMSA/NEG/69/2013. Developppping a technical interface between EMSA CleanSeaNet-DC and RBINS Oil Spill Model OSERIT*
2009-2012	*OSERIT, Belspo-SSD - Development of an integrated software for forecasting the impacts of accidental oil pollution.*
2009-2011	*Pilot project with the European Maritime Safety Agency in order to define data exchange format and linking of MUMM (FLOAT) drift modeling services to CleanSeaNet in demonstration mode.*

As principal investigator at RBINS

2023-2025	JIP ARISE / Amonia Response in Sea Emergencies [Joint Industrial Project]
2024-2025	MANIFESTS-Genius [EU UPCM project]

2024-2025 IMAROS 2 - IMpacts And Response Options regarding low sulphur marine fuel oil Spills. [EU UPCM project]

2021-2023 MANIFESTS - MANaging risks and Impacts From Evaporating and gaseous Substances To population Safety [EU UPCM project]

2020-2023 JERICO-DS - Joint European Research Infrastructure of Coastal Observatories - Design Study [EU H2020 project]

2020-2024 JERICO-S3 - Joint European Research Infrastructure of Coastal Observatories: Science, Service, Sustainability [EU H2020 project]

2020-2022 IMAROS - Improving response capacities and understanding the environmental impacts of new generation low sulphur MARine fuel Oil Spills [EU UPCM project]

2014-2015 *EU (DG-ECHO) project - Bonn Agreement: Area-wide Assessment of Risk Evaluation 2 BE-AWARE .*

2014-2015 *H2020 – MyOcean Follow-On*

2012-2014 FP7 MyOcean-2: *Prototype Operational Continuity for the GMES Ocean Monitoring and Forecasting Service*

2009-2012 FP7 MyOcean - Development of upgraded capabilities for existing GMES fast-track services and related (pre)operational services

2008-2009 Fluxys, Contrat de consultance entre l'UGMM et ARCADIS afin d'étudier l'impact du rejet de l'eau froide sur les courants et la température dans et autour de l'avant-port de Zeebrugges

As researcher

2023-2025 SUSANA – Sustainable Use of SAnd in NAture-based solution [vlaio]

2022-2024 EcoMPV – Studying the ecological impact of offshore photovoltaic farms [Belgium FPS Economy]

2020-2022 FORCOAST - Earth Observation Services for Fishery, Bivalves Mariculture and Oysterground Restoration along European Coasts [EU H2020 project]

2013 FP7-COBIOS. *Coastal Biomass Observatory Services*.

2011 *Milieueffectenbeoordeling van het NORTHER offshore windmolenpark ten zuidoosten van de Thorntonbank.*

2009-2010 G2LAT, BELSPO SSD- *Determination of the relation between vertical references in the Belgian Marine Area,* invited expert at several work meetings.

2009-2010 BOREAS, Belspo-SSD - *Belgian Ocean Energy Assessment,* invited expert at several work meetings.

2009 FP6 – ECOOP *European Coast-shelf sea Operational observing and forecasting system*.

2008 *ESA-GMES MARCOAST project*.

2007 *FP6 PROHIPP. New Design and manufacturing processes for high-pressure fluid power products*.

2002 Consulting contract between UCL EarthTech. *Implementation of an efficient algorithm for reconstructing divergence-free wind fields in the meteorological dowscaling model CALMET*.

1999-2006 *SLIM, the second generation Louvain-la-Neuve Ice-Ocean Mode*.

Some scientific publications

PhD thesis

1. **Legrand S**., 2006, *Maillages non-structurés en modélisation marine.* Université catholique de Louvain, Collection des thèses de la faculté de sciences n° 52. 154 p. http://hdl.handle.net/2078.1/5374

Articles published in peer review journals

1. Ghada El Serafy et al., 2023 EuroGOOS roadmap for operational coastal downstream services. Frontiers in Marine Sciences, , 2023-07 , Vol. 10 , P. 1177615 (21p.) 10.3389/fmars.2023.1177615
2. A. Gallego, R. O'Hara Murray, B. Berx, B. Turrell, M. Inall, T. Sherwin, J. Siddorn, S. Wakelin, V. Vlasenko, L.R. Hole, K. Frode Dagestad, J. Rees, L. Short, P. Rønningen, C. Main, CJ Beegle-Krause, S. **Legrand**, T Gutierrez, U. Witte and N. Mulanaphy. 2018. Deep Water Oil Spill Modelling Status and Challenges In the Faroe Shetland Channel, North Atlantic. Accepted for publication in Marine Pollution Bulletin.
3. Golbeck I., X. Li, F. Janssen, T. Brüning, J.W. Nielsen, V. Huess, J. Söderkvist, B. Büchmann, S. Siiriä, O. Vähä-Piikkiö, B. Hackett, N. Kristensen, H. Engedahl, E. Blockley, A. Sellar, P. Lagemaa, J. Ozer, **S. Legrand**, P. Ljungemyr and L. Axell (2015) Uncertainty estimation for operational ocean forecast products—a multi-model ensemble for the North Sea and the Baltic Sea. Ocean Dynamics (Impact Factor: 1.943), Volume 65, Issue 12, pp 1603–1631. doi:10.1007/s10236-015-0897-8
4. Baeye M., M. Fettweis, **S. Legrand**, Y. Dupont and V. Van Lancker, 2012, Mine burial in the seabed of high-turbidity area—Findings of a first experiment, Continental Shelf Research (Impact Factor: 2.09). 01/2012; 43:107 - 119. DOI:10.1016/j.csr.2012.05.009
5. Comblen R., **S. Legrand**, E. Deleersnijder and V. Legat, 2009, A finite Element Method for Solving the Shallow-Water Equations on the Sphere, Ocean Modelling (Impact Factor: 2.63), 28 (1-3), 12-23. DOI:10.1016/j.ocemod.2008.05.004
6. **Legrand S.**, E. Deleersnijder, E. Delhez and V. Legat, 2007, Unstructured, anisotropic mesh generation for the Northwestern European continental shelf, the continental slope and the neighbouring ocean,Continental Shelf Resarch (Impact Factor: 2.09), 27 (9), 1344-1356. DOI:10.1016/j.csr.2007.01.009
7. **Legrand S.**, E. Deleersnijder, E. Hanert, V. Legat and E. Wolanski, 2006, High-resolution unstructured meshes for hydrodynamic models of the Great Barrier Reef, Australia. Estuarine, Coastal and Shelf Science (Impact Factor: 2.324), 68 (1-2), 36-46. DOI:10.1016/j.ecss.2005.08.017
8. **Legrand S.**, V. Legat and E. Deleersnijder, 2000, Delaunay mesh generation for an unstructured-grid ocean general circulation model, Ocean Modelling (Impact Factor: 2.628), 2, 17-28. DOI:10.1016/S1463-5003(00)00005-6

Book

1. V.Dulière, F. Ovidio and **S. Legrand**, 2013. *Development of an Integrated Software for*

Forecasting the Impacts of Accidental Oil Pollution- OSERIT. Final Report. Brussels: Belgian Science Policy 2013 – 65 pp. (Research Programme Science for a Sustainable Development) http://www.belspo.be/belspo/SSD/science/Reports/OSERIT_FinRep_AD.pdf

Chapters in books or proceedings with reviewers (not up dated)

1. **Legrand, S**., & Schallier, R. (2021). System-to-system Interface Between the EMSA CleanSeaNet Service and OSERIT. Remote Detection and Maritime Pollution: Chemical Spill Studies, 87-114.

2. S. **Legrand**, S. Le Floch, L. Aprin, V. Parthenay, E. Donnay, S. Orsi, N. Youdjou, R. Schallier, F. Poncet, S. Chataing, E. Poupon and Y.-H. Hellouvry. (2018) HNS-MS: Improving Member States preparedness to face an HNS pollution of the Marine System. In: E. Buch, V. Fernández, D. Eparkhina, P. Gorringe and G. Nolan (Eds.) Operational Oceanography serving Sustainable Marine Development. Proceedings of the Eight EuroGOOS International Conference. 3-5 October 2017, Bergen, Norway, p. 387-394. ISBN 978-2-9601883-3-2.

3. **Legrand S.** and V. Duliere, 2013. *OSERIT: a downstream service dedicated to the Belgian Coast Guard Agencies*. In: H. Dahlin, N. C. Flemming, and S. E. Petersson (Eds.) Sustainable Operational Oceanography, Proceedings of the Sixth International Conference on EuroGOOS, 4 - 6 October 2011, Sopot, Poland, pp 159-167.

4. **Legrand S.** And V. Dulière, 2012. *OSERIT: An Oil Spill Evaluation and Response Integrated Tool*, Coastlab2012. Book of Abstract of the fourth international conference on the application of physical modelling to port and coastal protection. pp. 275-276, ISBN 978 90 382 2008 6

5. Naithani J., E. Deleersnijder, P.-D. Plisnier and **S. Legrand**, 2004, *Preliminary results of a reduced-gravity model of the wind-induced oscillations of the thermocline in Lake Tanganyika.* Proceedings of the Second International Conference on Tropical Climatology, Meteorology and Hydrology, G. Demarée, M. De Dapper and J. Alexandre (Eds.), Royal Meteorological Institute of Belgium and Royal Academy of Overseas Sciences of Belgium, pp. 27-40.
6. **Legrand S.**, V. Legat and E. Deleersnijder, 2003, *Mass conservation on global ocean model on unstructured meshes.* Proceedings of the 6th National Congress on Theoretical and Applied Mechanics (Ghent, Belgium, 26-27 May, 2003), NCTAM-2003-090, 4 pp.
7. **Legrand S.**, V. Legat and E. Deleersnijder, 2000, *Delaunay mesh generation for oceanic computations*. Proceedings of the 5th National Congress on Theoretical and Applied Mechanics (Louvain-la-Neuve, Belgium, 23-24 May 2000), Belgian National Committee for Theoretical and Applied Mechanics, pp. 131-134.