



Fernando Manzano Muñoz

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Email address: fermanzax@hotmail.com **Phone number:** (+34) 679019545

Gender: Male **Date of birth:** 23 Nov 1982 **Nationality:** Spanish

WORK EXPERIENCE

[Mar 2022 – Current] **Head of Unit Data Systems Development**

Puertos del Estado

City: Madrid

Country: Spain

Business or sector: Professional, scientific and technical activities

Main activities and responsibilities:

Copernicus service: Co-leading the Technical Working Group of the Copernicus Marine Service In Situ component, member of the MIC -Marine Insitu Collaboration-, member of the Technical Working Group of CMS.

Planning and Development Direction: Surveillance and control of the data collection from the oceanographic networks of Puertos del Estado, quality control in real time and data processing of the oceanographic data of Puertos del Estado, administration of the oceanographic databases of Puertos del Estado, data management and processing tools (NetCDF, ASCII, XML, JSON), dockerization of critical operational applications, management of Git repositories and automatic deployments with Jenkins.

Other activities within the Planning and Development Department.

[Mar 2018 – Feb 2022] **Senior consultant**

Puertos del Estado (Nologin)

City: Madrid

Country: Spain

Name of unit or department: Physical Environment

Business or sector: Professional, scientific and technical activities

Main activities and responsibilities:

Copernicus service: Co-responsible for the IBI region (Iberia-Biscay-Ireland) of CMEMS In Situ TAC. Development and management of data operational chain in the IBI region. Data treatment procedures: acquisition, quality control, NetCDF (OceanSITES - Instac) generation, synchronization with partners from overlapping regions (Ifremer, BSH, HCMR), visualization, comparison, and monitoring tools. Improvements in the procedures and in the design of the data model. Alerts and tracking system supported by a NoSQL database. Development of transversal components. Co-leading the development of the In Situ TAC Website. Development of CMEMSInstac web tool for visualization of charts in Django and on-demand. Completion of the documentation associated with the CMEMS service: monthly and annual reports for Mercator Ocean International.

Physical Environment Area: Coordination of the update and optimization of the virtual servers of the area. Design of the alternative architecture that sends emails and receives data from the measurement networks in real-time. Improvements on SELENE (Software for Quality and Sea Level Filtering). CMEMSIngester: integration of European networks in Puertos del Estado database operationally. Support for the integration of SAMOA2 modules. Dockerization of different applications and management of automatic deployments with Jenkins.

Technologies Python, Django, Java, NetCDF, PHP, Javascript (Leaflet, Highcharts...), Shell (sh, bash), Fortran (f2py), XML, JSON, PostgreSQL, MongoDB, Git (and git-flow), Gitlab (and Github), Jenkins, Docker.

[Sep 2015 – Apr 2018] **Head of Division**

Puertos del Estado

City: Madrid

Country: Spain

Name of unit or department: Physical Environment

Business or sector: Professional, scientific and technical activities

Main activities and responsibilities:

Copernicus service: Co-responsible for the IBI region (Iberia-Biscay-Ireland) of CMEMS In Situ TAC. Development and management of the data operational chain in the IBI region. Data treatment procedures: acquisition, quality control, NetCDF generation, visualization, comparison and monitoring tools. Development of NOSTROMO - the integrated management and monitoring system for the operations. Database engine migration from MySQL to PostgreSQL. Member of the technical board of the In Situ TAC. Completion of the documentation associated with the CMEMS service.

Physical Environment Area: SELENE - Maintenance and improvement of the software of quality control and sea level filtering. Various developments and maintenance of the department's software. Database administration support.

Technologies Python, Django, Java, NetCDF, Fortran (f2py), PHP, Javascript (Highcharts...), XML, JSON, PostgreSQL, MySQL.

[Nov 2014 – May 2015] **Information Technology manager**

Puertos del Estado (Fugro Norway)

City: Madrid

Country: Spain

Name of unit or department: Physical Environment

Business or sector: Professional, scientific and technical activities

Main activities and responsibilities:

MyOcean Follow-on project: Co-responsible for the IBI region (Iberia-Biscay-Ireland) of MyOcean2. Development and management of data operations in the IBI region. Data acquisition procedures, quality control, NetCDF generation. Other In Situ TAC cross-cutting tools. Fulfilling of the documentation associated with the MyOcean project.

Physical Environment Area: Rediseño y optimización del algoritmo de detección de tsunamis.

Technologies Java, Python, NetCDF, PHP, Javascript, XML, JSON, INGRES, PostgreSQL, MySQL.

[Aug 2012 – Sep 2014] **Information Technology manager**

Puertos del Estado

City: Madrid

Country: Spain

Name of unit or department: Physical Environment

Business or sector: Professional, scientific and technical activities

Main activities and responsibilities:

MyOcean project: Co-responsible for the IBI region (Iberia-Biscay-Ireland) of MyOcean2.

Development and management of the data operational chain in the IBI region. Data acquisition procedures, quality control, NetCDF generation. Other In Situ TAC cross-cutting tools. Fulfilling of the documentation associated with the MyOcean project.

Physical Environment Area: Coordination of the redesign and restructuring of the oceanographic database of the department in Puertos del Estado. Migration of the database engine from Ingres to PostgreSQL. Development of GulpMail, an application for receiving data from the real-time observation networks of Puertos del Estado. Development of RedAlert, an alert generation system.

Technologies Java, Python, NetCDF, PHP, Javascript, XML, JSON, INGRES, PostgreSQL, MySQL.

[Aug 2009 – Sep 2012] **Analyst consultant**

Ministry of Industry, Tourism and Trade (SATEC)

City: Madrid

Country: Spain

Name of unit or department: Electronic invoicing

Business or sector: Professional, scientific and technical activities

Main activities and responsibilities:

Support and evolution of the Facturae format: Development and evolution of version 4.0 of the Facturae format, aligned with international standards (CEN BII, UNCEFACT CII...). Maintenance of Oracle database and Oracle Forms / Reports application.

Technologies Java, Hibernate, Struts, Spring, Oracle

[Dec 2007 – Sep 2009] **Project manager**

Ministry of Industry, Tourism and Trade (VASS)

City: Madrid

Country: Spain

Name of unit or department: Electronic invoicing

Business or sector: Professional, scientific and technical activities

Main activities and responsibilities:

Facturae: Analysis, design, and programming of the official application for generating electronic invoices offered by the Ministry at the national level: Facturae.

Technologies Java, Hibernate, XML, advanced presentation logic.

[Aug 2007 – Jan 2008] **Project manager**

Telefónica (Telenium)

City: Madrid

Country: Spain

Main activities and responsibilities:

E-Agora Portal: Leading the development team for the QJ User Management application, which manages the LDAP of the e-Agora Providers Portal, critical for Telefónica de España's business.

[Jun 2005 – Sep 2007] **Programmer analyst**

Telefónica (Telenium)

City: Madrid

Country: Spain

Main activities and responsibilities:

E-Agora Portal: Responsible for the integration of applications in the Portal. Portal Administrator. Development of JSP and Java components on Vignette 7.

Technologies Java, JSP, Vignette

[Apr 2004 – Aug 2004] **Programmer**

National Centre for Supervision and Operations - CNSO (Axpe Consulting)

City: Madrid

Country: Spain

Main activities and responsibilities:

PDSL Project: Support to CNSO as a PDSL expert to configure monitored tests.

Technologies Perl, OVIS (HP), Firehunter (Agilent), CitraTest (TEVRON)

[Jul 2003 – Jul 2005] **Programmer / Integrator**

Telefónica I+D

City: Madrid

Country: Spain

Main activities and responsibilities:

PDSL Project: Solaris Systems Administrator. Management of ATG Dynamo eCommerce platform. Java and JSP developments (including "droplets").

Technologies Java, JSP, ATG Dynamo

EDUCATION AND TRAINING

[1999 – 2005] **Computer Science Engineering**

Escuela Superior de Informática of Ciudad Real – Castilla-La Mancha University (UCLM)

Level in EQF: EQF level 7

Thesis: PFC: Oracle Label Security code Generator for Secured Databases (with Honors)

Main subject / occupational skills covered:

Software Engineering, Advanced Programming, Concurrent Programming, Advanced Databases, Artificial Intelligence, Project Management.

LANGUAGE SKILLS

Mother tongue(s): Spanish

Other language(s):

English

LISTENING C1 READING C2 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

French

LISTENING A1 READING A1 WRITING A1

SPOKEN PRODUCTION A1 SPOKEN INTERACTION A1

OPERATIONAL OCEANOGRAPHY

Ten years of experience in operational oceanography and more than twelve in data processing

The last 10 years of work experience have given me great knowledge in operational oceanography and in the processing of oceanographic data: physical data (waves, currents, temperature, salinity ...), meteorological data (wind, pressure, humidity ...), and biogeochemistry (oxygen, turbidity, chlorophyll ...). As part of the work carried out in this period: the acquisition of data from different types of stations (buoys, tide gauges, ships, radars, ARGOs, gliders ...) from different providers (Meteogalicia, IGN, Puertos del Estado, Instituto Hidrográfico, Marine Institute, NOC ...) of different nationalities (Spain, Portugal, France, UK, Ireland ...) with very different formats; automatic quality control and scientific validation of data, homogenization of information in a unique format and synchronization with other institutions.

COMMUNICATION AND INTERPERSONAL SKILLS

European projects

Good communication skills acquired through participation in different European projects related to operational oceanography. In a previous stage, as an expert in electronic invoicing, I have also actively participated in working groups and national and international conferences.

Multi-faceted vision

Working for different companies, from different sectors of activity, has given me a plural view to work and collaborate with colleagues and managers.

MANAGEMENT AND LEADERSHIP SKILLS

CMEMS In Situ TAC

Different positions of responsibility in the context of CMEMS In Situ TAC.

- Technical leader of the CMEMS In Situ TAC of the IBI region.
- Co-leadership of the WWW team of CMEMS In Situ TAC.
- Technical co-leadership of CMEMS In Situ TAC products.

Management and team coordination

Several project manager and coordination positions throughout my professional career, from very early on. In the last stage giving support to the coordination of the IT team of Physical Environment Area.

DIGITAL SKILLS

My Digital Skills

Operative Systems

Linux (Debian, Fedora, Ubuntu) | Solaris | Windows | Sistema operativo macOS

Programming languages

Java | Python | C | PHP | ADA | .NET | Fortran | Shell Scripting | Perl | PLSQL

Frameworks

Spring | Django | JSF | FastAPI | AOP | Anaconda | Struts | Ibatis | Hibernate

Databases

PostgreSQL | Pgpool | Ingres | MySQL | Access | SQLServer | Oracle | MongoDB | Hsql db

Code management and deployments

Git/Gitlab/Github | Dockers | Git-flow | Apache Maven | Subversion SVN | Jenkins

Data treatment

netCDF | XSLT, XML and XML Technologies | JSON | YAML

PUBLICATIONS

[2018] **Copernicus Marine Service Ocean State Report, issue 2**

<https://doi.org/10.1080/1755876X.2018.1489208>

Reference: Journal of Operational Oceanography, 11:sup1, S1-S142, DOI: 10.1080/1755876X.2018.1489208

Karina von Schuckmann ((Editor)), Pierre-Yves Le Traon ((Editor)), Neville Smith ((Editor)), Ananda Pascual ((Editor)), Pierre Brasseur ((Editor)), Katja Fennel ((Editor)), Samy Djavidnia ((Editor)), Signe Aaboe, Enrique Alvarez Fanjul, Emmanuelle Autret, Lars Axell, Roland Aznar, Mario Benincasa, Abderahim Bentamy, Fredrik Boberg, Romain Bourdallé-Badie, Bruno Buongiorno Nardelli, Vittorio E. Brando, Clément Bricaud, Lars-Anders Breivik, Robert J.W. Brewin, Arthur Capet, Adrien Ceschin, Stefania Ciliberti, Gianpiero Cossarini, Marta de Alfonso, Alvaro de Pascual Collar, Jos de Kloe, Julie Deshayes, Charles Desportes, Marie Drévillon, Yann Drillet, Riccardo Droghei, Clotilde Dubois, Owen Embury, Hélène Etienne, Claudia Fratianni, Jesús García Lafuente, Marcos Garcia Sotillo, Gilles Garric, Florent Gasparin, Riccardo Gerin, Simon Good, Jérôme Gouillon, Marilaure Grégoire, Eric Greiner, Stéphanie Guinehut, Elodie Gutknecht, Fabrice Hernandez, Olga Hernandez, Jacob Høyer, Laura Jackson, Simon Jandt, Simon Josey, Mélanie Juza, John Kennedy, Zoi Kokkini, Gerasimos Korres, Mariliis Kõuts, Priidik Lagemaa, Thomas Lavergne, Bernard le Cann, Jean-François Legeais, Benedicte Lemieux-Dudon, Bruno Levier, Vidar Lien, Ilja Maljutenko, **Fernando Manzano**, Marta Marcos, Veselka Marinova, Simona Masina, Elena Mauri, Michael Mayer, Angelique Melet, Frédéric Mélin, Benoit Meyssignac, Maeva Monier, Malte Müller, Sandrine Mulet, Cristina Naranjo, Giulio Notarstefano, Aurélien Paulmier, Begoña Pérez Gomez, Irene Pérez Gonzalez, Elisaveta Peneva, Coralie Perruche, K. Andrew Peterson, Nadia Pinardi, Andrea Pisano, Silvia Pardo, Pierre-Marie Poulain, Roshin P. Raj, Urmas Raudsepp, Michaelis Ravdas, Rebecca Reid, Marie-Hélène Rio, Stefano Salon, Annette Samuelsen, Michela Sammartino, Simone Sammartino, Anne Britt Sandø, Rosalia Santoleri, Shubha Sathyendranath, Jun She, Simona Simoncelli, Cosimo Solidoro, Ad Stoffelen, Andrea Storto, Tanguy Szerkely, Susanne Tamm, Steffen Tietsche, Jonathan Tinker, Joaquín Tintore, Ana Trindade, Daphne van Zanten, Luc Vandenbulcke, Anton Verhoef, Nathalie Verbrugge, Lena Viktorsson, Karina von Schuckmann, Sarah L. Wakelin, Anna Zacharioudaki & Hao Zuo

[2016]

Lessons Derived from Two High-Frequency Sea Level Events in the Atlantic: Implications for Coastal Risk Analysis and Tsunami Detection

Reference: Frontiers in Marine Science.3:206

Pérez-Gómez, B, **Manzano-Muñoz F**, Alvarez-Fanjul E, González C, Cantavella JV, Schindelé F.

[2016] **Copernicus Marine Service Ocean State Report, issue 1**

<http://dx.doi.org/10.1080/1755876X.2016.1273446>

Reference: Journal of Operational Oceanography, 9:sup2, s235-s320, DOI: 10.1080/1755876X.2016.1273446

Karina von Schuckmann, Pierre-Yves Le Traon, Enrique Alvarez-Fanjul, Lars Axell, Magdalena Balmaseda, Lars-Anders Breivik, Robert J. W. Brewin, Clement Bricaud, Marie Drevillon, Yann Drillet, Clotilde Dubois, Owen Embury, H  l  ne Etienne, Marcos Garc  a Sotillo, Gilles Garric, Florent Gasparin, Elodie Gutknecht, St  phanie Guinehut, Fabrice Hernandez, Melanie Juza, Bengt Karlson, Gerasimos Korres, Jean-Fran  ois Legeais, Bruno Levier, Vidar S. Lien, Rosemary Morrow, Giulio Notarstefano, Laurent Parent,   lvaro Pascual, Bego  a P  rez-

G  mez, Coralie Perruche, Nadia Pinardi, Andrea Pisano, Pierre-Marie Poulain, Isabelle M. Pujol, Roshin P. Raj, Urmas Raudsepp, Herv   Roquet, Annette Samuelsen, Shubha Sathyendranath, Jun She, Simona Simoncelli, Cosimo Solidoro, Jonathan Tinker, Joaqu  n Tintor  , Lena Viktorsson, Michael Ablain, Elin Almroth-Rosell, Antonio Bonaduce, Emanuela Clementi, Gianpiero Cossarini, Quentin Dagneaux, Charles Desportes, Stephen Dye, Claudia Fratianni, Simon Good, Eric Greiner, Jerome Gourrion, Mathieu Hamon, Jason Holt, Pat Hyder, John Kennedy, **Fernando Manzano-Mu  oz**, Ang  lique Melet, Benoit Meyssignac, Sandrine Mulet, Bruno Buongiorno Nardelli, Enda

O'Dea, Einar Olason, Aur  lien Paulmier, Irene P  rez-Gonz  lez, Rebecca Reid, Marie-Fanny Racault, Dionysios E. Raitsos, Antonio Ramos, Peter Sykes, Tanguy Szekely & Nathalie Verbrugge

[2014] **MyOcean In-Situ Thematic Centre: A service for operational Oceanography**

Reference: 7th EuroGOOS Conference Proceedings .Lisboa, 28-30 October 2014. 5 p.

Pouliquen, S., Carval, T., Guillotin, D., Coatanoan, C., Loubrieu, T., Guyot, C., Szekely, T., Gourrion, J., Grouazel, A., Von Schuckmann, K., Wedhe, H., Ringheim, L. S., Hammarklint, T., Hartman, A., Soetje, K., Gies, T., Jandt, S., Muller, L., De Alfonso, M., **Manzano Mu  oz, F.** , Perivoliotis, L., Kassis, D., Chalkiopoulos, A., Marinova, V., Jaccard, P., Ledang, A., Sorensen, K., Notarstefano, G., Tintore, J., Kaitala, S., Roiha, P., Rickards, L., Manzella, G., Reseghetti, F.

CONFERENCES AND SEMINARS

[18 Apr 2021 – 29 Apr 2021] **EGU General Assembly - The Copernicus Marine Service (CMEMS) OS4.6** Online

In Situ TAC Dashboard, an Advanced Tool for visualizing CMEMS In Situ products: Paz Rotll  n-Garc  a, **Fernando Manzano**, Maria Sotiropoulou, and the CMEMS In Situ Thematic Assembly Center. The In Situ Thematic Assembly Center (In Situ TAC) for the Copernicus Marine Environment Monitoring Service (CMEMS) is the only data component in the system, out of a total of fifteen, in charge of delivering quality-checked in situ observations in both near real time (NRT products) and delay mode (REP products) for their use in the characterisation of ocean state and variability, assimilation and/or validation activities carried out by the metocean community.

[28 Sep 2020 – 12 Oct 2020] **Copernicus Marine Service 2020 IBI REGION ONLINE TRAINING WORKSHOP** Online

In Situ Observation products. **Fernando MANZANO**, Paz Rotllan Garcia. Mercator Ocean International, Cluster Mar  timo de Canarias (CMC) nd Plataforma Oce  nica de Canarias (PLOCAN), organized the Copernicus Marine Service Online Training Workshop dedicated to the IBI region: Iberia-Biscay-Ireland.

[6 Apr 2019 – 11 Apr 2019]

EGU General Assembly - Informatics in Oceanography and Ocean Science ESS11.1 y Copernicus Marine Environment Monitoring Service (CMEMS) OS4.11

Viena, Austria

NOSTROMO: New Operative's System, Tools, and Resources for Ocean Monitoring and Observations. An integrated solution to manage and monitor the continuity and quality of service for CMEMS In Situ TAC - IBI region Alejandro Gallardo, **Fernando Manzano**, and Marta de Alfonso.

IBISVAL: IBI Software for VALidation. A tool for validation and intercomparing of CMEMS In Situ TAC observations in the IBI region **Fernando Manzano**, Alejandro Gallardo, and Marta de Alfonso.

[7 Apr 2018 – 12 Apr 2018] **EGU General Assembly - Informatics in Oceanography and Ocean Science ESSI 1.1** Viena, Austria

Puertos del Estado Data Center: Fernando Manzano Muñoz, Susana Pérez Rubio, Marta de Alfonso Alonso-Muñoyerro, and Enrique Álvarez Fanjul.v: The Data Center is the core facility to deal with all the operational oceanographic services provided by Puertos del Estado to the Spanish ports and to the society. The center activity started in the mid-1980s and evolved in time according to the growth and new requirements of Puertos del Estado systems. As a result of this evolution, keeping in touch with the latest developments and new technologies, the data center today is a complex and multilayer system of systems, processing tasks ranging from data acquisition and quality-control to storage, dissemination, and visualization.

[2 Oct 2016 – 6 Oct 2016] **4th Workshop Anual IQuOD** Tokyo, Japón

CMEMS in situ TAC. Copernicus Marine Environment Monitoring Service in situ Thematic Assembly Centre. A service for Operational Oceanography: T. Carval, **F. Manzano Muñoz**, S. Pouliquen, L. Petit de la Villeon, T. Loubrieu, H. Wedhe, L. S. Ringheim, T. Hammarklint, S. Tamm, M. De Alfonso, L. Perivoliotis, A. Chalkiopoulos, V. Marinova, J. Tintore, and C. Troupin.

[16 Apr 2016 – 19 Apr 2016] **EGU General Assembly - Informatics in Oceanography and Ocean Science ESSI1.1** Viena, Austria

CMEMS (Copernicus Marine Environment Monitoring Service) In Situ Thematic Assembly Centre: A service for operational Oceanography: **F. Manzano Muñoz**, S. Pouliquen, L. Petit de la Villeon, T. Carval, T. Loubrieu, H. Wedhe, L. S. Ringheim, T. Hammarklint, S. Tamm, M. De Alfonso, L. Perivoliotis, A. Chalkiopoulos, V. Marinova, G. Notarstefano, J. Tintore, C. Troupin. Copernicus, previously known as GMES (Global Monitoring for Environment and Security), is the European Programme for the establishment of a European capacity for Earth Observation and Monitoring. Within CMEMS, the In Situ Thematic Assembly Centre (INSTAC) distributed service integrates in situ data from different sources for operational oceanography needs. CMEMS INSTAC is collecting and carrying out quality control in a homogeneous manner on data from providers outside Copernicus (national and international networks), to fit the needs of internal and external users.

[9 Dec 2015 – 10 Dec 2015] **1er CMEMS IBI User & Training Workshop In Situ TAC** Lisboa, Portugal

Copernicus Marine Service Workshop for Atlantic European South West Shelf Ocean: **F. Manzano Muñoz**. The workshop is focused on current or future CMEMS users that are interested in the IBI region, as service providers or final users, with investigation or commercial purposes.

SEMINARS AND COURSES

Seminars

J2EE Architecture, Java and J2EE Application Optimization, Java and XML, Neutral comparison of J2EE Application Servers, J2EE Fundamentals, Firewall in Linux: Netfilter, Introduction to Web Services, DBA Module in Toad, J2EE or .NET ?, MySQL

Courses

Python with scientific applications, Detection and Correction of Vulnerabilities in Web Applications, J2EE. Web Development with Jakarta Struts and Spring, Administration and Development in Linux, Web Services Development in Java, Problems in Internet Systems Security, Visual Basic .NET Programming, Visual Studio 2010 and .NET Framework 4.0