

Dr. Alain Fontaine - CTO

Research engineer
Specialised in computational fluid dynamics and system optimisation

37 years old – French nationality

SKILLS

<i>Project management</i>	<ul style="list-style-type: none">● Management of scientific software development● Needs analysis, specifications, tests, validations, deployment● Hardware resources needs analysis
<i>Systems engineering</i>	<ul style="list-style-type: none">● Management of systems of software for near real-time Operational Research● Interoperability norms & protocols● Data qualifications● Near real-time operational reporting (forecast)
<i>Technical</i>	<ul style="list-style-type: none">● Development and optimisation of scientific software● Computational Fluid Dynamics software & tools development● Data analysis
<i>Research</i>	<ul style="list-style-type: none">● Methodology & experimental protocols● Scientific communications (articles, conferences...)
<i>Teaching</i>	<ul style="list-style-type: none">● Management of Teaching Units (Fluid dynamics & heat transfer for Master degree)● Technical & pedagogical documentation
<i>Languages</i>	French Mother Tongue English Fluent

PROFESSIONAL EXPERIENCES (details in the next pages)

1.5 year	(May 2018 – now) CTO of HYCCO – Albi/Toulouse - France
5 years	(May 2013 – Apr. 2018) Observatoire Midi-Pyrénées (CNRS) – Toulouse – France
8 months	(Apr. 2012 – Dec. 2012) Board of Education of Toulouse – Toulouse – France
4 years	(Oct. 2007 – Oct. 2011) - University of Toulouse III – Toulouse – France

EDUCATIONAL BACKGROUND

2011	PhD in Energetic & Transfers	Université Toulouse III Paul Sabatier
	<i>Numerical study of the thermos-acoustic effect, application for cooling and for thermos-convective separation</i>	
2007	Master of Research (Fluid dynamics, Energetics & Transfers)	INP Toulouse
2007	Master of Engineering (Numerical Fluid Mechanics)	ENSEEIH, Toulouse

PUBLICATIONS

- Articles**
- ACP, acp-2018-665** "The role of biomass burning as derived from the tropospheric CO vertical profiles measured by IAGOS aircraft in 2002–2017" by Hervé Petetin et al., [DOI: 10.5194/acp-18-17277-2018](https://doi.org/10.5194/acp-18-17277-2018), published 6 Dec 2018
- ACP, acp-2017-778** "Climatology and long-term evolution of ozone and carbon monoxide in the upper troposphere–lower stratosphere (UTLS) at northern midlatitudes, as seen by IAGOS from 1995 to 2013" by Yann Cohen et al., [DOI: 10.5194/acp-18-5415-2018](https://doi.org/10.5194/acp-18-5415-2018), published 20 Apr 2018
- ACP, acp-2017-653** "Source attribution using FLEXPART and carbon monoxide emission inventories: SOFT-IO version 1.0" by Bastien Sauvage et al., [DOI: 10.5194/acp-17-15271-2017](https://doi.org/10.5194/acp-17-15271-2017), published 22 Dec 2017
- ACP, acp-2015-513** "Characterising tropospheric O₃ and CO around Frankfurt over the period 1994–2012 based on MOZAIC–IAGOS aircraft measurements" by Hervé Petetin et al., [DOI: 10.5194/acp-16-15147-2016](https://doi.org/10.5194/acp-16-15147-2016), published 7 Dec 2016
- AMT, amt-2015-355** "Adapted ECC ozonesonde for long-duration flights aboard boundary-layer pressurised balloons" by François Gheusi et al., [DOI: 10.5194/amt-9-5811-2016](https://doi.org/10.5194/amt-9-5811-2016), 5 Dec 2016

- Communications**
- EGU2016-7324** "Source attribution using FLEXPART and carbon monoxide emission inventories for the IAGOS In-situ Observation database" by Alain Fontaine et al.
- EGU2016-7432** "The new IAGOS Database Portal" by Damien Boulanger et al.
- EGU2016-7383** "Access to Emissions Distributions and Related Ancillary Data through the ECCAD database" by Sabine Darras et al.
- EGU2015-6093** "Lagrangian modelling tool for IAGOS database added-value products" by Alain Fontaine et al.
- EGU2015-5797** "GIRAFE, a campaign forecast tool for anthropogenic and biomass burning plumes" by Alain Fontaine et al.
- EGU2015-11183** "Modified ECC ozone sonde for long-duration flights aboard isopiestic drifting balloons" by Francois Gheusi et al.
- EGU2015-10053** "Annual and seasonal trends of tropospheric ozone and CO over Frankfurt between 1994-2011 based on MOZAIC-IAGOS aircraft measurements" by Hervé Petetin et al.

DETAILED PROFESSIONAL EXPERIENCES

HYCCO

May 2018 – now (2 years)

Project	Developing an innovative composite bipolar plate
Co-Founder	Duties: Technical and research projects management
Technical Env.	Test bench design, FC design, Numerical modelling design, Composite fabrication

University Toulouse III Paul Sabatier – Engineering Science Department

Apr. 2014 – Sept 2019 (6 years)

Project	Physics of fluids and Heat transfer teaching for Master degree
Teacher (vacancies)	Duties: Teaching, internship tutoring
Technical Env.	Pedagogical documents & evaluations

Observatory Midi-Pyrénées (CNRS) – Data management Department (SEDOO)

Apr. 2015 – Apr. 2018 (3 years)

Project	Management of data & systems of software for IAGOS
Research Engineer	Duties: IAGOS is an European Research Infrastructure for global observations of atmospheric composition from commercial aircraft
	Management, development, optimisation of decisional scientific software
	Data analysis and qualifications
	Data formatting for interoperability
	Scientific communications

Technical Env. Linux, shell scripts, Fortran, SLURM, netCDF, GRIB, ssh, ftp

Oct. 2014 – Mars 2015 (0,5 year)

Research Engineer	Project	Web interface development for CAPEDB (Carbonaceous Aerosol Particle Emission Database)
	Duties	Need analysis, specifications, development and tests & validation of a web interface Database requests management Data formatting
	Technical Env.	Linux, PHP, SQL

May 2013 – Sept 2014 (1,5 year)

Research Engineer	Project	Management of decisional software for scientific campaign GIRAFE : a Lagrangian forecast tool for biomass burning and anthropogenic plume transport BAMED : an isopycnal transport forecast tool for meteorological balloons
	Duties	Management & optimisations of software and data cycles Near real-time data reporting (forecast) Scientific campaign design (Numerical studies) Scientific communications
	Technical Env.	Linux, perl, fortran, script shell, SLURM, GRIB, ssh, ftp, NCL

Board of Education of Toulouse

Sept. 2012 – Dec. 2012 (4 months)

Teacher	Project	Mathematics teacher in Comprehensive School
	Duties	Teaching for classes from year 11 to year 13
	Env.	High School Saint Sernin Toulouse

Apr. 2012 – July 2012 (4 months)

Teacher	Project	Mathematics teacher in Secondary School
	Duties	Teaching for year 7, 8 and 10 classes
	Env.	Secondary School Clemence Isaure Toulouse

PHASE Laboratory - University Toulouse III Paul Sabatier

Oct. 2010 – Oct. 2011 (1 year)

Research & teacher assistant	Project	Thermo-acoustic effects numerical studies
	Duties	Numerical studies of the thermos-acoustic refrigerator Numerical studies of thermos-acoustic effects and thermos-convective separation of mixing of fluids Teaching for licence degree in Civil Engineering (Habitat Engineering): Fluid dynamics Scientific communications
	Technical Env.	Windows, Linux, Matlab, COMSOL, SLURM, ssh

Oct. 2007 – Sept. 2010 (3 years)

PhD Student	Project	PhD Energetics speciality
	Duties	Numerical study of a thermos-acoustic refrigerator Numerical modelling of thermos-acoustic effect Scientific communication
	Env.	Windows, Linux, Matlab, COMSOL