1- Journaux / Revues

Articles scientifiques - ACL

1. Zhen Y., Resseguier V., Chapron B. - 2023. Physically constrained covariance inflation from location uncertainty. *Nonlinear Processes in Geophysics,* 30 (2), 237-251, https://dx.doi.org/10.5194/npg-30-237-2023, https://hal.inrae.fr/hal-04204126, OA
2. Cazes C., Fiabane L., Theron F., Heitz D., Le Coq L. - 2023. Image analysis for the time-resolved description of microparticle resuspension under transient airflow. *Journal of Aerosol Science,* 173, 106198, https://dx.doi.org/10.1016/j.jaerosci.2023.106198, https://hal.inrae.fr/hal-04109582, OA
3. Le Cap C., Carlier J., Quénol H., Heitz D., Buisson E. - 2023. Analysis of the spatial variability of temperature with the aim of improving the location of wind machines. *Theoretical and Applied Climatology,* , https://dx.doi.org/10.1007/s00704-023-04642-7, https://hal.inrae.fr/hal-04334742
4. BEN ALI Y., TISSOT G., AGUINAGA S., HEITZ D., MEMIN E. – 2022. Mean wind flow reconstruction of a high-rise building based on variational data assimilation using sparse pressure measurements. Journal of Wind Engineering and Industrial Aerodynamics, 231, pp.16/105204. ⟨10.1016/j.jweia.2022.105204⟩. ⟨hal-03869758⟩
5. RESSEGUIER, V., LADVIG, M., HEITZ, D. – 2022. Real-time estimation and prediction of unsteady flows using reduced-order models coupled with few measurements. Journal of Computational Physics, 471, 111631, https://doi.org/10.1016/j.jcp.2022.111631. ⟨hal-03445455v3⟩
6. RAHIMI KHOJASTEH, A., YANG, Y, HEITZ, D., LAIZET, S. – 2022. Lagrangian coherent track initialization. Physics of Fluids 33, 095113, https://doi.org/10.1063/5.0060644. ⟨hal-03340178⟩
7. YANG, Y, HEITZ, D. - 2021 Kernelized Lagrangian particle tracking. Experiments in Fluids, Springer Verlag (Germany), 62 (12), 27 p. ⟨10.1007/s00348-021-03340-2⟩. ⟨hal-03452539⟩
8. RAHIMI KHOJASTEH, A., LAIZET, S., HEITZ, D., YANG, Y. – 2021. Lagrangian and Eulerian dataset of the wake downstream of a smooth cylinder at a Reynolds number equal to 3900, Data in Brief, Volume 40, 107725, ISSN 2352-3409, https://doi.org/10.1016/j.dib.2021.107725.
9. RAHIMI KHOJASTEH, A., HEITZ, D., YANG, Y. – 2021. Lagrangian Coherent Track Initialisation (LCTI) for cylinder wake flow in 4D-PTV. *ERCOFTAC Bulletin*, European Research Community on Flow, Turbulence And Combustion. ⟨hal-03278528⟩
10. YANG, Y, HEITZ, D. – 2021. Kernelized Lagrangian Particle Tracking and Lagrangian Particle Image Velocimetry. *ERCOFTAC Bulletin*, European Research Community on Flow, Turbulence And Combustion. ⟨hal-03278538⟩

Articles de synthèse / revues bibliographiques – AS / REV

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

2- Ouvrages

Chapitres d'ouvrage en anglais ou dans une autre langue étrangère – CHP

1. Resseguier V., Hascoët E., Chapron B. - 2022. Random ocean swell-rays: a stochastic framework. In: *Stochastic Transport in Upper Ocean Dynamics.* Springer Nature, https://hal.science/hal-03821873, OA

3- Production dans des colloques / congrès, séminaires de recherche

Articles publiés dans des actes de colloques / congrès

1. Le Cap C., Carlier J., Katurji M., Lin D., Quénol H., Georgeault P., Buisson E., Heitz D. - 2023. *Towards numerical simulation of a wind machine during spring frost calibrated with field measurements.* Presented at : EGU General Assembly 2023, Vienne, Autriche (2023-04-23 - 2023-04-28), https://dx.doi.org/10.5194/egusphere-egu23-1425, https://hal.inrae.fr/hal-04042326, OA
2. Cazes C., Theron F., Fiabane L., Heitz D., Le Coq L. - 2023. *Remise en suspension de microparticules pour des accélérations d'air, analyse dimensionnelle des propriétés de l'écoulement.* Presented at : CFA2023 : 36ème Congrès

Français sur les Aérosols, Paris, France (2023-03-15 - 2023-03-16), https://dx.doi.org/10.25576/ASFERA-CFA2023-32910, https://hal.inrae.fr/hal-04043159

3. Resseguier V., Chapron B., Mémin E. - 2022. Effects of smooth divergence-free flows on tracer gradients and spectra: Eulerian prognosis description. *Journal of Physical Oceanography,* 52 (1), 53-74, https://dx.doi.org/10.1175/JPO-D-21-0014.1, https://hal.inrae.fr/hal-03371892, OA
4. Resseguier V., Ladvig M., Heitz D. - 2022. Real-time estimation and prediction of unsteady flows using reduced-order models coupled with few measurements. *Journal of Computational Physics,* 471, 111631, https://dx.doi.org/10.1016/j.jcp.2022.111631, https://hal.inrae.fr/hal-03445455, OA
5. RAHIMI KHOJASTEH A., HEITZ D, FIABANE L. - 2022. Lagrangian diffusion properties of the wake behind a cylinder using time-resolved particle tracking velocimetry. 12th International Symposium on Turbulence and Shear Flow Phenomena (TSFP12), July, Osaka (Online), Japan. (hal-03864606)
6. RAHIMI KHOJASTEH A., HEITZ D. – 2022. Generic energy function to predict particle positions in 4D-PTV. 20th International Symposium on Application of Laser and Imaging Techniques to Fluid Mechanics, July, Lisbon, Portugal. (hal-03864727)
7. RAHIMI KHOJASTEH A., HEITZ D. - 2022. Diffusion properties of time-resolved trajectories in the wake behind a cylinder. 20th International Symposium on Application of Laser and Imaging Techniques to Fluid Mechanics, July, Lisbon, Portugal. (hal-03864735)
8. CAZES C., FIABANE L., THERON F., HEITZ D., LE COQ L. – 2022. Image analysis for the study of particle resuspension. CFA2022 - 35ème Congrès Français sur les Aérosols, ASFERA, May, Paris, France. (10.25576/ASFERA-CFA2022-27959)
9. RAHIMI KHOJASTEH A., HEITZ D., YANG Y. - 2021. *Adjustable interrogation window for 2D PIV estimation based on local Lagrangian coherency*. Presented at: 14th International Symposium on Particle Image Velocimetry – ISPIV 2021, Chicago, États-Unis, https://hal.inrae.fr/hal-03316124
10. RAHIMI KHOJASTEH A., HEITZ D., YANG Y., FIABANE L. - 2021. *Particle position prediction based on Lagrangian coherency for flow over a cylinder in 4D-PTV*. Presented at : 14th International Symposium on Particle Image Velocimetry – ISPIV 2021, Chicago, États-Unis, https://hal.inrae.fr/hal-03316123
11. YANG Y., HEITZ D. -2021. *LAPIV using multi-resolution warping and proxy regularization.* Presented at : 14th International Symposium on Particle Image Velocimetry – ISPIV 2021, Chicago, États-Unis, https://hal.inrae.fr/hal-03316194
12. LE CAP C., CARLIER J., QUENOL H., HEITZ D., BUISSON E. - 2021. *Joint study of spatial variability of temperatures and wind machine performance in the Quincy vineyard to improve fight against spring frost events.* Presented at : 34ème colloque de l'Association Internationale de Climatologie, Casablanca, Maroc (2021-07-07 - 2021-07-10), https://hal.inrae.fr/hal-03341043
13. PICARD A. M., LADVIG M., RESSEGUIER V., HEITZ D., MÉMIN E., CHAPRON B. -2021. *Real-time flow estimation from reduced order models and sparse measurements.* Presented at: AERO 2020+1, Visioconference, France (2021-04-12), https://hal.inrae.fr/hal-02969086

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

1. Cazes C., Theron F., Fiabane L., Heitz D., Le Coq L. – 2023. Study of the resuspension phenomenon during airflow acceleration using Eulerian and Lagrangian approaches. *European Aerosol Conference, EAC2023*, Sep 2023, Malaga, Spain. (hal-04385714)
2. Resseguier V., Hascoët E., Chapron B. - 2023. *Swell refraction by oceanic currents and multiscale stochastic closures.* Presented at : Oberwolfach Workshop on "Transport and Scale Interactions in Geophysical Flows", Oberwolfach, Allemagne (2023-07-16 - 2023-07-21), https://hal.inrae.fr/hal-04186548
3. Chapron B., Resseguier V., Hascoët E. - 2023. Markovian & non-Markovian closure for wave-turbulence interaction. Presented at : Workshop on Statistical Methods for Dynamical Stochastic Models (Dynstoch 2023), Londres, Royaume-Uni (2023-03-27 - 2023-03-29), https://hal.inrae.fr/hal-04186536
4. Resseguier V., Ladvig M., Picard A. M., Heitz D. - 2023. *Estimation of multiplicative noise operator statistics for reduced data assimilation in fluid mechanics.* Presented at: Workshop on Statistical Methods for Dynamical Stochastic Models (Dynstoch 2023), Londres, Royaume-Uni (2023-03-27 - 2023-03-29), https://hal.inrae.fr/hal-04186538
5. Resseguier V., Zhen Y., Chapron B. - 2023. *Arbitrary stochastic transportation maps for data assimilation & the relations to physics based stochastic transportation maps.* Presented at: Stochastic transport in upper ocean dynamics (STUOD) workshop, Brest, France (2023-09-25), https://hal.inrae.fr/hal-04224625
6. Resseguier V., Wallian L., Heitz D., Stabile G. - 2023. *Improving airflow monitoring and control solutions in wind energy & agroecology sectors.* Presented at: Math2Product 2023, Taormina, Italie (2023-05-30 - 2023-01-06), https://hal.inrae.fr/hal-04186543
7. Resseguier V., Wallian L., Heitz D. - 2023. *Fast data assimilation of sparse measurements for time extrapolation of main flow patterns.* Presented at: 22nd Computational Fluids Conference (CFC 2023), Cannes, France (2023-04-25 - 2023-04-28), https://hal.inrae.fr/hal-04186541
8. Resseguier V., Picard A. M., Ladvig M., Le Pape G., Moneyron A., Jacquet P., Wallian L., Heitz D., Stabile G. - 2023. *Resolution-aware prior generation for reduced data assimilation in fluid dynamics.* Presented at: 7th ECCOMAS

(European Congress on Computational Methods in Applied Sciences and Engineering) Young Investigators Conference (YIC) 2023, Porto, Portugal (2023-06-19 - 2023-06-21), https://hal.inrae.fr/hal-04186546

9. Resseguier V., Chapron B., Mémin E. - 2022. *Understanding and parametrizing downscaling and mixing analyses from altimeter-derived oceanic currents.* Presented at: LPS 2022 - Living Planet Symposium, Bonn, Allemagne (2022-05-23 - 2022-05-27), https://hal.inrae.fr/hal-03709380, OA
10. LE CAP C., CARLIER J., HEITZ D., QUENOL H., BUISSON E. – 2022. Mechanisms involved in the heating of the environment by the aerodynamic action of a wind machine to protect a vineyard against spring frost. TERCLIM2022 - XIVth International Terroir Congress | 2nd ClimWine Symposium, July, Bordeaux, France. ⟨hal-03864547⟩
11. JACQUET P., MONEYRON A., LE PAPE G., LADVIG M., PICARD A.M., RESSEGUIER V., HEITZ D., STABILE G. – 2022. Stochastic reduced order models for Bayesian estimation problems in fluid mechanics. Model Reduction and Surrogate Modeling (MORE), Sep, Berlin, Germany. ⟨hal-03822497⟩
12. RESSEGUIER V., PICARD A.M., LADVIG M., HEITZ D. – 2022. Fast Generation of prior for Bayesian estimation problems in fluid mechanics. UQsay Uncertainty Quantification (UQ), Jun, Visioconférence, France. ⟨hal-03709416⟩
13. LE PAPE G., PICARD A.M., LADVIG M., RESSEGUIER V., HEITZ D., BESSARD L. – 2022. Conservative stochastic reduced order models for real-time fluid flow data assimilation. ECCOMAS 2022, Jun, Oslo, Norway. ⟨hal-03709467⟩
14. MONEYRON A., JACQUET P., LE PAPE G., LADVIG M., PICARD A.M., RESSEGUIER V., HEITZ D., STABILE G. - 2022. New reduced order models for real-time data assimilation using few sensors. 14th European Fluid Mechanics Conference (EFMC14), European Mechanics Society, September, Athens, Greece. ⟨hal-03822510⟩
15. RAHIMI KHOJASTEH A., HEITZ D., LAIZET, S. – 2022. Lagrangian structure-function using stationarised fluid trajectories in the wake of a smooth cylinder. 14th European Fluid Mechanics Conference (EFMC14), European Mechanics Society, September, Athens, Greece. ⟨hal-03861633⟩
16. CAZES C., THERON F., FIABANE L., LE COQ L, HEITZ D. – 2022. Image analysis for time-resolved analysis of microparticle resuspension kinetics on a ventilated duct surface. 11th International Aerosol Conference (IAC), September, Athens, Greece. ⟨hal-03863032⟩
17. CAZES C., THERON F., FIABANE L., LE COQ L, HEITZ D. – 2022. Microparticle resuspension under accelerated airflow: dimensional analysis to account for the airflow pattern properties. 11th International Aerosol Conference (IAC), September, Athens, Greece. ⟨hal-03862988⟩
18. LE CAP C., HEITZ D., CARLIER J., QUENOL H., BUISSON E. - 2021. *Towards wind machines park management automatization to improve fight against spring frost events.* Presented at : Workshop DFKI-INRAE-Inria « Cooperation in AI & Agriculture », Kaiserslautern, Allemagne (2021-09-06), https://hal.inrae.fr/hal-03345968
19. RESSEGUIER V., LADVIG M., PICARD A. M., MÉMIN E., HEITZ D., VOISIN D., BRAUD C. - 2021. *Real-time unsteady air flow prediction to reduces mechanic load variations and wind turbine maintenance costs.* Presented at: SEANERGY 2021 - International leading event on offshore wind and marine renewable energy, Nantes, Saint-Nazaire, France (2021-09-21 - 2021-09-24), https://hal.inrae.fr/hal-03278863

4- Produits et outils informatiques

Logiciels

1. Resseguier V., Wallian L. – 2023. *PyReDa : assimilation de données grâce à un modèle d'ordre réduit sous incertitude de localisation pour la mécanique des fluides préentrainé.*
2. Resseguier V., Wallian L. – 2023. *Redlumcpp : construction et simulation de modèle d'ordre réduit sous incertitude de localisation pour la mécanique des fluides (DNS ou LES) et l'assimilation de données associée.*
3. Loisel P., Heitz D. – 2023. *QuantifLeaks-ppm : estime la distribution spatiotemporelle de la concentration d'un fluide (en ppm.m) dans une séquence d'images d'observation du fluide.*
4. Loisel P., Heitz D. – 2023. *QuantifLeaks-flow : estime la distribution spatiotemporelle du débit d'un fluide dans une séquence d'images d'observation du fluide.*
5. Cazes C., Fiabane L., Heitz D., Theron F., Le Coq L. - 2023. *Automatic particle detection algorithm.* https://hal.inrae.fr/hal-03954927
6. Yang Y., Heitz D. – 2022. *KLPT: Kernelized Lagrangian Particle Tracking*.
7. Yang Y., Heitz D. – 2022. *LaPIV: Lagrangian Particle Image Velocimetry*.

5- Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs (7)

6- Autres produits propres à une discipline

1- Haffner, Y., Heitz, D., Perret, L., Braud, P. – 2023. Experimental dataset of turbulent flow around a 5:1 rectangular cylinder with geometric variations, https://doi.org/10.57745/WDIKG9, Recherche Data Gouv, V1.

2- CAZES, C., FIABANE, L., THERON, F., HEITZ, D., LE COQ, L. – 2023. Bronze particle resuspension in an accelerated flow, https://doi.org/10.57745/XHRRXF, Recherche Data Gouv, V2.

3- RAHIMI KHOJASTEH, Ali; LAIZET, Sylvain; HEITZ, Dominique; YANG, Yin, 2021, "Lagrangian and Eulerian dataset of flow over a circular cylinder at Reynolds number 3900", https://doi.org/10.15454/GLNRHK, Recherche Data Gouv, V6

4- Activités éditoriales

Participation à des comités éditoriaux (journaux scientifiques, revues, collections, etc.)

5- Indices de reconnaissance

Responsabilités dans des sociétés savantes

1. RESSEGUIER, V. a été membre du conseil de l'école doctorale MATISSE de l'univ Rennes de 2020 à 2023.
2. HEITZ, D. est membre du conseil scientifique du Pôle Cristal de Dinan.
3. HEITZ, D. est membre du conseil scientifique de la Plate-forme Jules Verne du CSTB.
4. FIABANE L. est membre du conseil scientifique de l'Aspec.

Organisations de colloques / congrès internationaux

Invitations à des colloques / congrès à l'étranger

1- Cazes C., Theron F., Fiabane L., Heitz D., Le Coq L. - 2023. Study of the resuspension phenomenon during airflow acceleration using Eulerian and Lagrangian approaches. *European Aerosol Conference, EAC2023*, Sep 2023, Malaga, Spain. (hal-04385714)

2- Resseguier V., Hascoët E., Chapron B. - 2023. *Swell refraction by oceanic currents and multiscale stochastic closures.* Presented at: Oberwolfach Workshop on "Transport and Scale Interactions in Geophysical Flows", Oberwolfach, Allemagne (2023-07-16 - 2023-07-21), https://hal.inrae.fr/hal-04186548

3- Resseguier V., Zhen Y., Chapron B. - 2023. *Arbitrary stochastic transportation maps for data assimilation & the relations to physics based stochastic transportation maps.* Presented at: Stochastic transport in upper ocean dynamics (STUOD) workshop, Brest, France (2023-09-25), https://hal.inrae.fr/hal-04224625

4- Resseguier V., Wallian L., Heitz D., Stabile G. - 2023. *Improving airflow monitoring and control solutions in wind energy & agroecology sectors.* Presented at: Math2Product 2023, Taormina, Italie (2023-05-30 - 2023-01-06), https://hal.inrae.fr/hal-04186543

5- Resseguier V., Wallian L., Heitz D. - 2023. *Fast data assimilation of sparse measurements for time extrapolation of main flow patterns.* Presented at: 22nd Computational Fluids Conference (CFC 2023), Cannes, France (2023-04-25 - 2023-04-28), https://hal.inrae.fr/hal-04186541

6- Resseguier V., Picard A. M., Ladvig M., Le Pape G., Moneyron A., Jacquet P., Wallian L., Heitz D., Stabile G. - 2023. *Resolution-aware prior generation for reduced data assimilation in fluid dynamics.* Presented at: 7th ECCOMAS (European Congress on Computational Methods in Applied Sciences and Engineering) Young Investigators Conference (YIC) 2023, Porto, Portugal (2023-06-19 - 2023-06-21), https://hal.inrae.fr/hal-04186546

7- RESSEGUIER V., PICARD A.M., LADVIG M., HEITZ D. – 2022. Fast Generation of prior for Bayesian estimation problems in fluid mechanics. UQsay Uncertainty Quantification (UQ), Jun, Visioconférence, France. (hal-03709416)

8- LE PAPE G., PICARD A.M., LADVIG M., RESSEGUIER V., HEITZ D., BESSARD L. – 2022. Conservative stochastic reduced order models for real-time fluid flow data assimilation. ECCOMAS 2022, Jun, Oslo, Norway. (hal-03709467)

Séjours dans des laboratoires étrangers

II - INTÉRACTION DE L'ÉQUIPE AVEC L'ENVIRONNEMENT NON ACADÉMIQUE, IMPACTS SUR L'ÉCONOMIE, LA SOCIÉTÉ, LA CULTURE, LA SANTÉ

1- Brevets, licences et déclarations d'invention

Déclarations d'invention

1. Resseguier V., Wallian L. – 2023. *PyReDa : assimilation de données grâce à un modèle d'ordre réduit sous incertitude de localisation pour la mécanique des fluides préentrainé.*
2. Resseguier V., Wallian L. – 2023. *Redlumcpp : construction et simulation de modèle d'ordre réduit sous incertitude de localisation pour la mécanique des fluides (DNS ou LES) et l'assimilation de données associée.*
3. Loisel P., Heitz D. – 2023. *QuantifLeaks-ppm : estime la distribution spatiotemporelle de la concentration d'un fluide (en ppm.m) dans une séquence d'images d'observation du fluide*. DI-RV-23-0129
4. Loisel P., Heitz D. – 2023. *QuantifLeaks-flow : estime la distribution spatiotemporelle du débit d'un fluide dans une séquence d'images d'observation du fluide*. DI-RV-23-0128
5. Cazes C., Fiabane L., Heitz D., Theron F., Le Coq L. - 2023. *Automatic particle detection algorithm.* https://hal.inrae.fr/hal-03954927
6. Yang Y., Heitz D. – 2022. Logiciel LaPIV : Lagrangian Particle Image Velocimetry
7. Yang Y., Heitz D. – 2022. Logiciel KLPT : Kernelized Lagrangian Particle Tracking
8. Heitz D., Guibert A., Loisel P., Georgeault P., Blondel L. - 2020. Dispositif et méthode pour la quantification des débits de fuites de gaz par imagerie infrarouge.

Brevets déposés

1. Heitz D., Guibert A., Loisel P., Georgeault P., Blondel L. - 2020. Système et procédé de quantification des débits de fuites de gaz. FR2008177

Brevets acceptés

1. Heitz D., Guibert A., Loisel P., Georgeault P., Blondel L. - 2022. Système et procédé de quantification des débits de fuites de gaz. FR2008177

Brevets licenciés

2- Produits destinés au grand public

Produits de vulgarisation : articles, interviews, éditions, vidéos, produits de médiation scientifique, débats science et société, etc.

1. Resseguier V.. Comment améliorer le rendement des éoliennes ?. 2022. *Interstice*. (hal-03697784)
2. CARLIER J., REGNAUD P., GEORGEAULT P., LE CAP C., HEITZ D. – 2022. Mesure de l'écoulement généré par une maquette de tour antigel à échelle réduite. SICTAG Mag', FRCUMA Centre - Val de Loire, 3 (Mars), pp.16-18. (hal-03863235)
3. LE CAP C., CARLIER J., GEORGEAULT P., BUISSON E., HEITZ D., QUÉNOL H. - 2021. Gelées du printemps 2020 à Quincy : une analyse des données riche d'enseignements ! *SICTAG Mag',* (février), 5-8, https://hal.inrae.fr/hal-03279299
4. LE CAP C., CARLIER J., GEORGEAULT P., BUISSON E., HEITZ D., QUÉNOL H. - 2021. Premiers résultats de la campagne de mesures terrain de décembre 2020. *SICTAG Mag',* (Février), 9-11, https://hal.inrae.fr/hal-03279569