

# Application BASTRI

## Fiches Equipes

### ANGE (SR0534MR)

Analyse Numérique, Géophysique et Ecologie  
ANGE □ ANGE (SR0631GR)

**Statut:** Terminée

**Responsable :** Jacques Sainte-marie

**Mots-clés de "A - Thèmes de recherche en Sciences du numérique - 2024" :** *Aucun mot-clé.*

**Mots-clés de "B - Autres sciences et domaines d'application - 2024" :** *Aucun mot-clé.*

**Domaine :** Santé, biologie et planète numériques  
**Thème :** Sciences de la planète, de l'environnement et de l'énergie

**Période :** 01/11/2012 -> 31/03/2014

**Dates d'évaluation :**

**Etablissement(s) de rattachement :** UPMC, CNRS, CETMEF  
**Laboratoire(s) partenaire(s) :** <sans UMR>

**CRI :** Centre Inria de Paris  
**Localisation :** Rocquencourt  
**Code structure Inria :** 021120-0

**Numéro RNSR :** 201221061V  
**N° de structure Inria:** SR0534MR

### Présentation

The research activities carried out within the ANGE team strongly couple the development of methodological tools with the applications to real-life problems and the transfer of numerical codes. Even if the definition of the scientific program is more problem-driven by challenging applications than methodology-driven, it is fundamental to keep at each step a rigorous approach and mathematical justifications of the proposed results. The difficulties arising in geophysics are threefold 1- The models and equations encountered in fluid mechanics (typically the free surface Navier-Stokes equations) are complex to analyze and solve. 2- This first feature is reinforced by the fact that the considered phenomena often take place over large domains with very heterogeneous length scales (size of the domain, mean depth, wave length\dots) and different time periods e.g. coastal erosion, propagation of a tsunami,... 3- Last but not least, these problems are multi-physics with strong couplings and nonlinearities.

### Axes de recherche

The modeling, the analysis and the simulation of geophysical flows are complex and challenging topics and these issues have been given an extensive coverage in applied research and engineering. But the growing importance of sustainable development issues coupled with the complexity of the problems arising in geophysics imply to go further than the classical Shallow Water type systems. Typically, we focus on gravity driven flows such as 1- hazardous flows (flooding, rogue waves, landslides\dots), 2- sustainable energies (hydrodynamics-biology coupling, biofuel production, marine energies...), 3- risk management and land-use planning (morphodynamic evolutions, early warning systems...). As suggested by the preceding list, this is an extensive field. For these multi-scale and multi-physics systems, the difficulty is often to isolate a reduced-size problem for which mathematical modeling and simulation can bring significant benefits.

### Relations industrielles et internationales

#### Contact

- **Responsable :** Jacques Sainte-marie
- **Tél :**
- **Secrétariat Tél :**

#### En savoir plus

- Site de l'équipe
- Site sur [inria.fr](http://inria.fr)
- Derniers Rapports d'Activité : [2016](#), [2017](#), [2018](#), [2019](#), [2020](#), [2021](#), [2022](#), [2023](#)

#### Documents sur la structure

- [Intranet](#)
- [Privés](#)

#### Décisions

- [8931](#) (19/10/2012) : création
- [8937](#) (23/10/2012) : nomination responsable
- [9602](#) (06/09/2013) : prolongation

#### Localisation

- **Adresse postale :** *Non renseignée*
- **Coordonnées GPS :** 48.83703, 2.103342