



INSTITUT NATIONAL
DE L'INFORMATION
GÉOGRAPHIQUE
ET FORESTIÈRE

IGN FRANCE MAIN ACHIEVEMENTS IN GEODESY AND POSITIONING

2016-2018

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IGN/SGN
Head of RGP
(Permanent GNSS Network)*



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SUMMARY

French national infrastructure

GNSS Permanent network (RGP)
Vertical reference
Gravimetry

Research and development

Contributions to international organizations

IGS
DORIS
REGINA
SONEL



NATIONAL INFRASTRUCTURE

GNSS PERMANENT NETWORK (RGP)

492 permanent stations (2018/03/31)

31 new stations in 2017, already 16 in 2018

Mostly multi-constellation

IGN acts as a coordinator of many partners

RGP-related services

Website rgp.ign.fr: ca. 3000 visitors/month

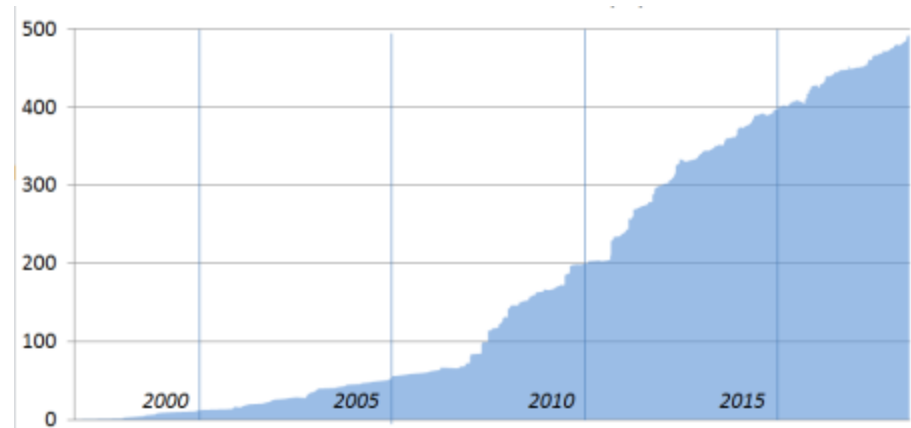
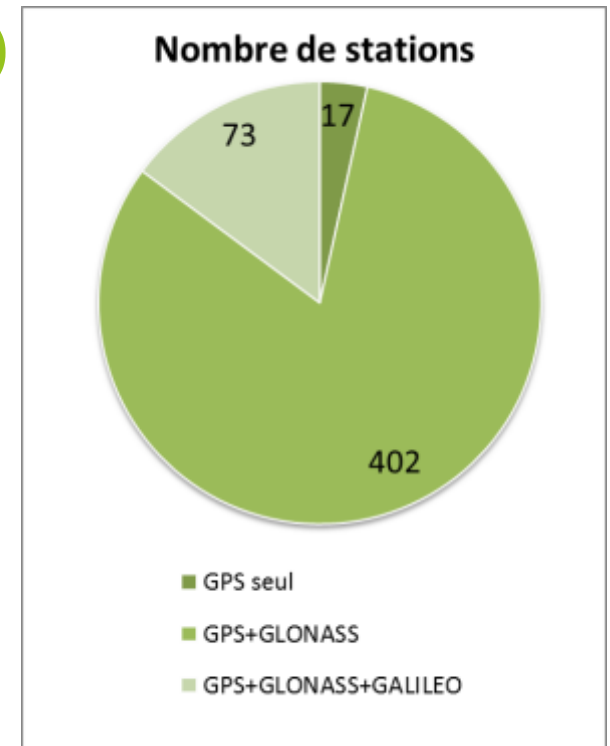
Data download: ca 3000 DL/month

GNSS processing online service: ca 300/month

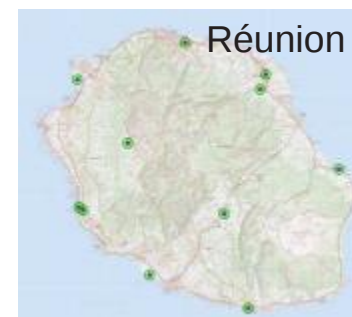
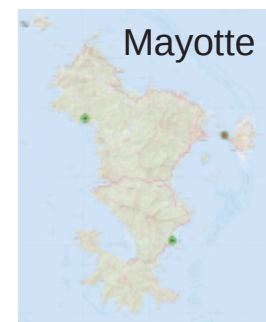
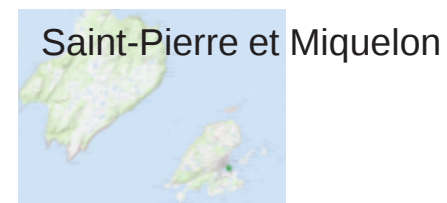
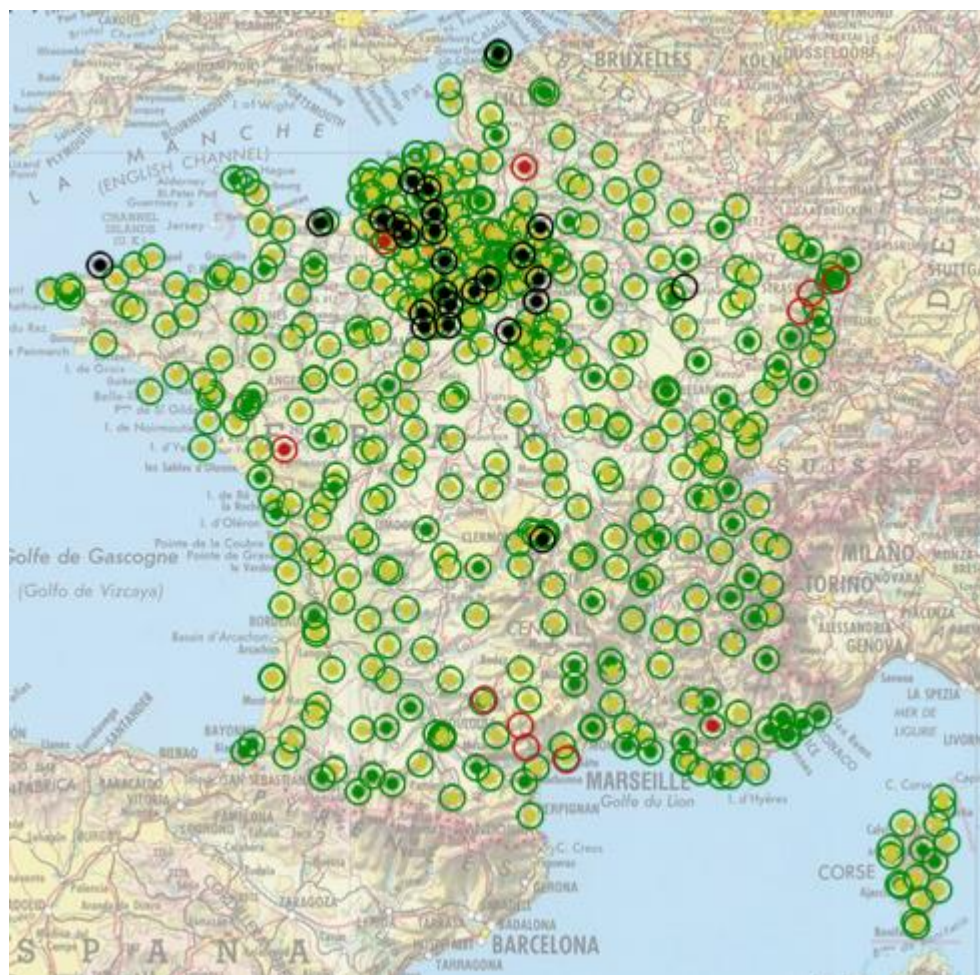
Perspectives

More than 500 stations – develop infrastructure in French Guyana, Guadeloupe and Martinique

PPP online service



GNSS PERMANENT NETWORK (RGP)



VERTICAL REFERENCES

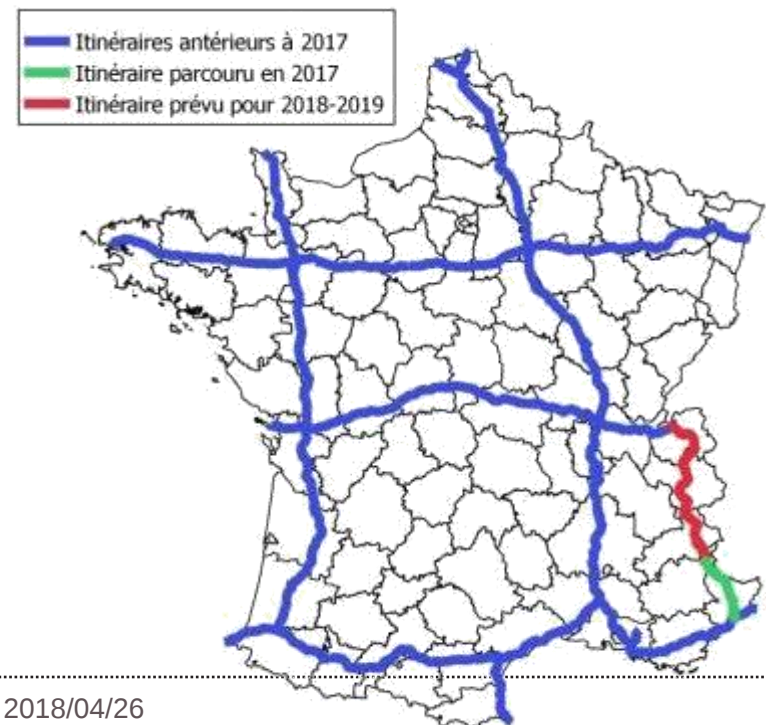
ERNIT: maintenance of the national levelling network

A 12 year project 2008-2019



NIREF: reference levelling

140 km in 2017



GRAVIMETRIC NETWORK

Improvement of the reference network

45 absolute gravimetry points

132 relative gravimetry traverses

Perspectives

New reference network in Saint-Pierre et Miquelon

Improvement of the network

Tests in areas with high gravity variability (Brittany)





RESEARCH AND DEVELOPMENT

RESEARCH AND DEVELOPMENT

Galileo

GRSP weekly combination
Daily combination since 2014

Geoid model

New geoid model RAF17, integrating the latest leveling and gravimetric campaigns.
Accuracy ca. 1,1 cm.

Orbits

Ultra-fast orbit processing – GPS,
GPS+GLONASS
Prototype processing for
GPS+GLONASS+GALILEO

Objectives:
Independence from others organizations
Development of internal applications (PPP,
aerial trajectography, hourly ZTD processing)

Circe v5

Open-source multiplatform geodetic software
GIS-oriented (GIS and Lidar formats)



CONTRIBUTIONS TO INTERNATIONAL ORGANIZATIONS

INTERNATIONAL CONTRIBUTIONS



IGN contributions

Data and analysis center for IGS.
Terrestrial Frame combination center
Weekly combination of IGS reference frame

Realization of the International Terrestrial
Reference Frame (ITRF)

Development and hosting of the IGS website
www.igs.org
Organization of IGSWorkshop 2017 in Paris



IGS14 network

INTERNATIONAL CONTRIBUTIONS



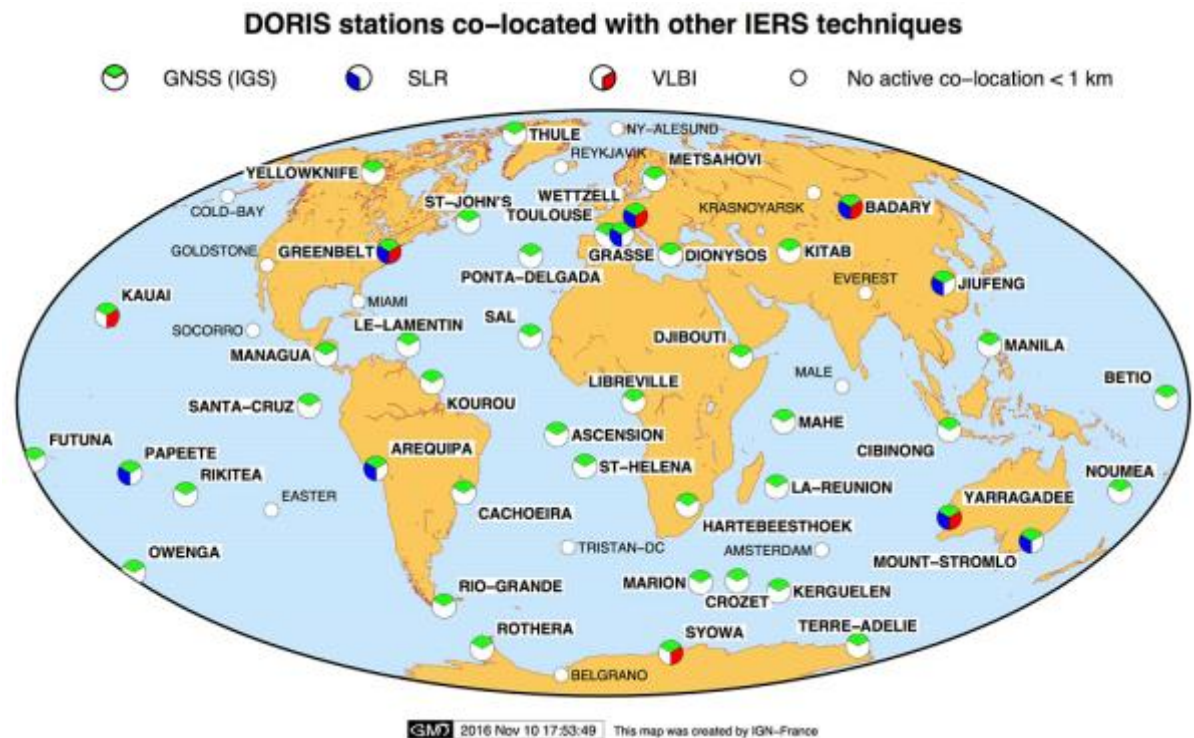
A 30 year partnership between CNES and IGN.

Ca. 60 stations all around the world, co-located with other techniques

IGN contributions

DORIS network maintenance and evolution

IDS data center,
Member of IDS,
DORIS representative at IERS



INTERNATIONAL CONTRIBUTIONS



GNSS network for IGS and navigation

Partnership between CNES and IGN.
36 full-GNSS stations all around the world

Real-time service



IGN contributions

Operational infrastructure management

Redundant mission center

R&D for inter-system calibration and PPP

INTERNATIONAL CONTRIBUTIONS



Network for sea-level observation from tide gauges (relative sea levels) and from modern geodetic techniques (vertical land motion and absolute sea level)

GNSS datacenter for GLOSS (Global Sea Level Observing System)



IGN contributions

GNSS data center

GNSS stations implantation, management and measurement



THANK YOU FOR
YOUR ATTENTION

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