Instituto Murciano de Investigación y Desarrollo Agrario - IMIDA

INSPIRE Compliant Provision of Metrological Sensor Data at the IMIDA Murcia, Spain

Authors:

Manuel Erena Arrabal, Grupo de Sig y Teledeteccion, IMIDA
Juan Antonio Lopez Morales, Grupo de Sig y Teledeteccion, IMIDA
Benjamin Quest, con terra GmbH

25 – 29 MAY 2015
LISBON CONGRESS CENTRE, PORTUGAL

IMIDA

- Institute of Agricultural and Food Research and Development of Murcia
- Autonomous, state-funded research institute
- Situated in Murcia

- Plans and coordinates the diffusion of research results
- Supports the spatial data infrastructure of Murcia and GIS and remote sensing team → SIGyT

SIAM (Agrarian Information System of Murcia)

- 45 automatic stations in irrigated areas
  - 30 IMIDA, 15 Ministry de Agriculture

  → Estimate the reference evapotranspiration (ET0) and irrigation needs of crops
- 10 minutes observation intervals
  - Temperature
  - Relative humidity
  - Global radiation incident wind speed and direction
  - Dew point temperature
  - Vapor pressure deficit and precipitation

- Observation data → important source for information in many domains
  - Hydrology
  - Air quality
  - Weather monitoring
  - Humans as Sensors
  - Traffic
  - Geology
  - ...
- Relevance for INSPIRE Annex II and III themes

- Already available: Guidelines for the use of Observations & Measurements and Sensor Web Enablement-related standards in INSPIRE Annex II and III data specification development
- Does not define the interface
- Proposal for an update of the Technical Guidance document for INSPIRE Download services (52° North)

Project goals

- Data Download Service via INSPIRE GML and ATOM feeds
- Prototype of INSPIRE compliant OGC Sensor Observation Service (SOS)
  - “Observations & Measurements" (O&M)
  - Extension of SOS Server with INSPIRE specific capabilities

  → INSPIRE compliant Download Service for observation data

Project Activites

- Conceptual Mapping INSPIRE and Observations Data
- ETL Processing
- INSPIRE ATOM Feeds & SOS services + client for observations

Conceptual Mapping

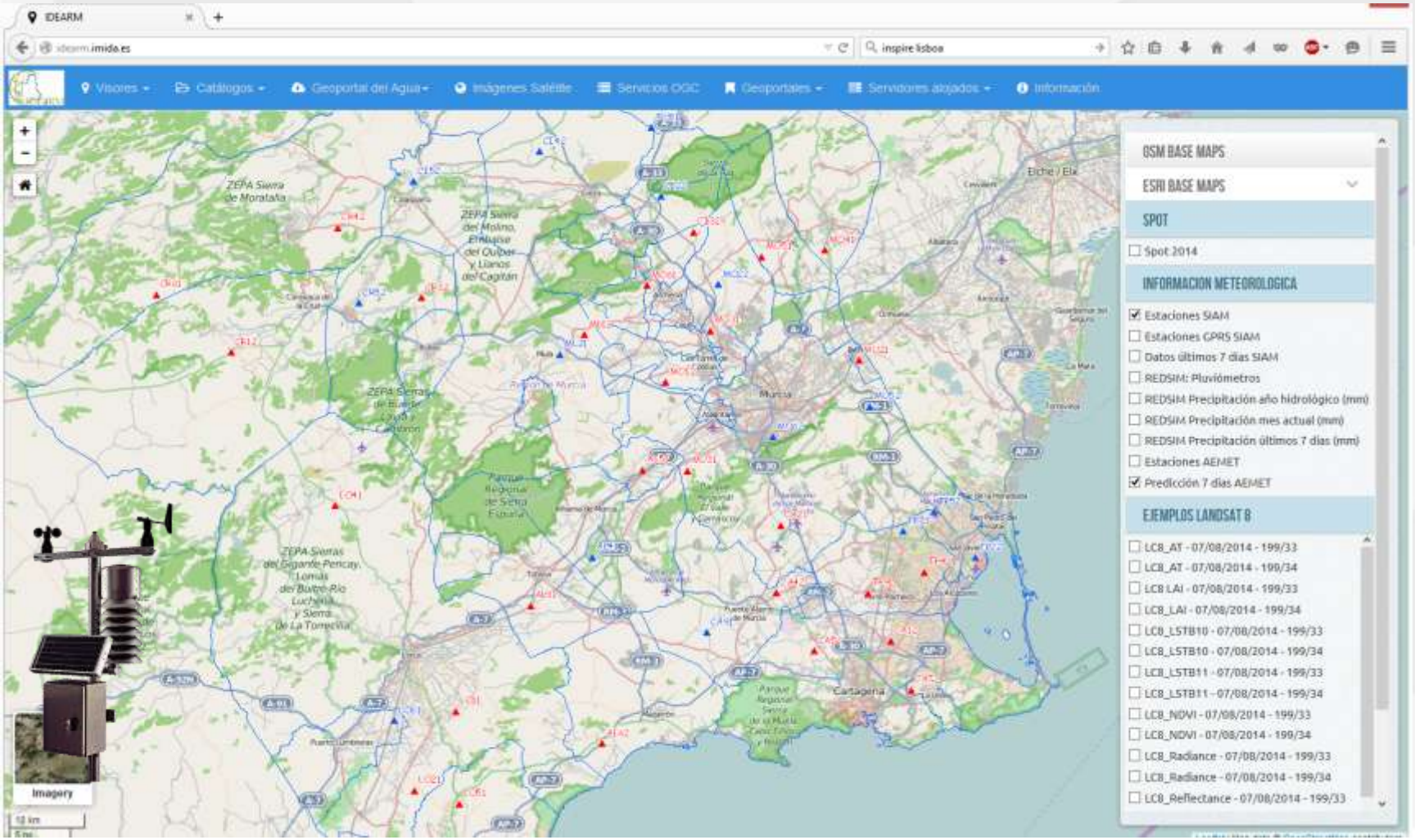
- Mapping of stations
  - Excel Spreadsheets of annex III theme “Environmental Monitoring Facilites”
- Mapping of Observations
  - Observations & Measurements (O&M)

ETL Processing

- FME & INSPIRE Solution Pack for FME
  - Transform stations data (location, capabilities) to INSPIRE Environmental Monitoring Facilities data (INSPIRE GML)
- Data Sources
  - Excel (stations)
  - CSV files (observations)
  - XML (ISO metadata)

SIGyT equipment

Automatic stations network)



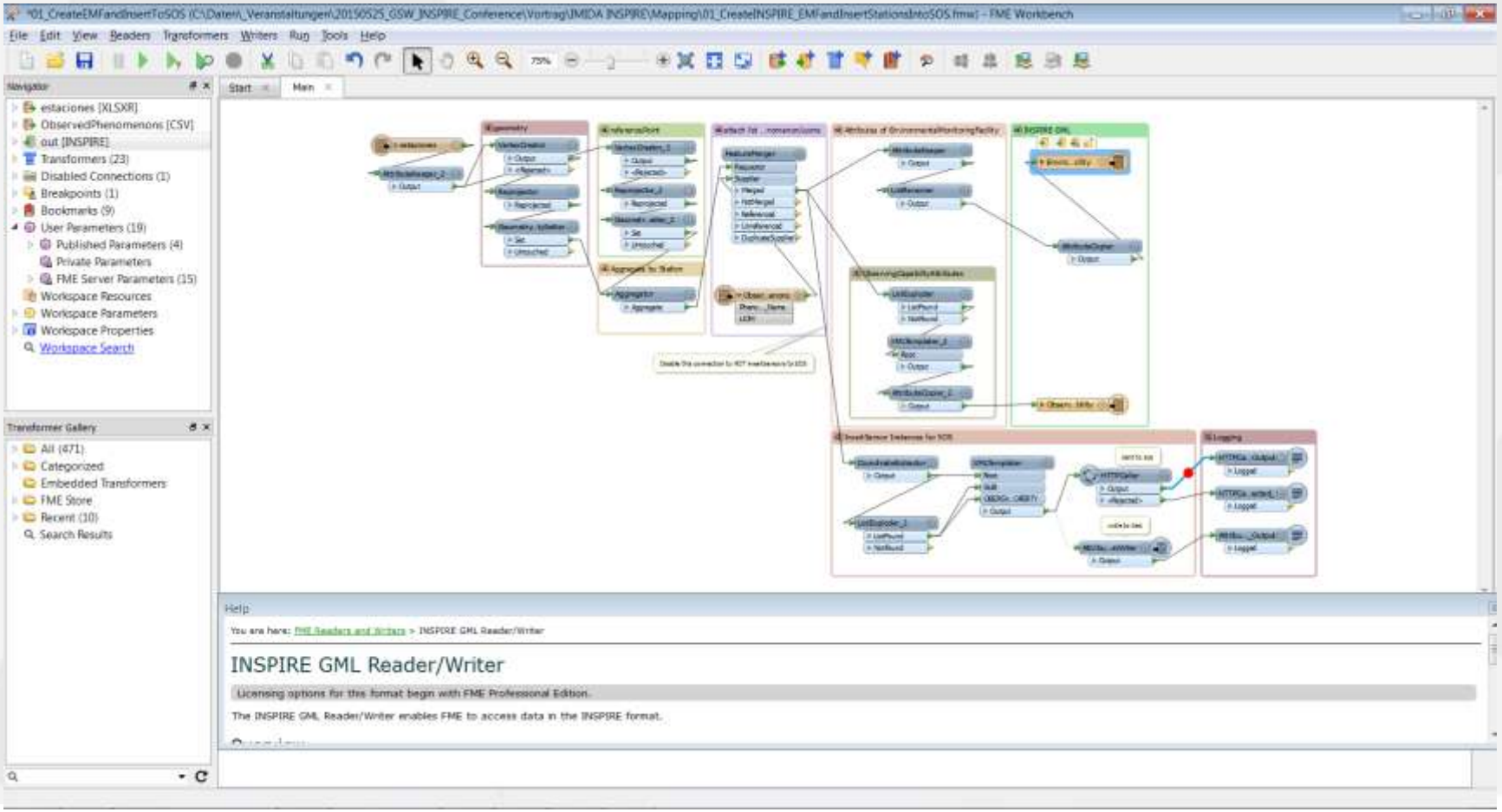
http://siam.imida.es

http://www.idearm.es

FME INSPIRE and SOS Data Transformation

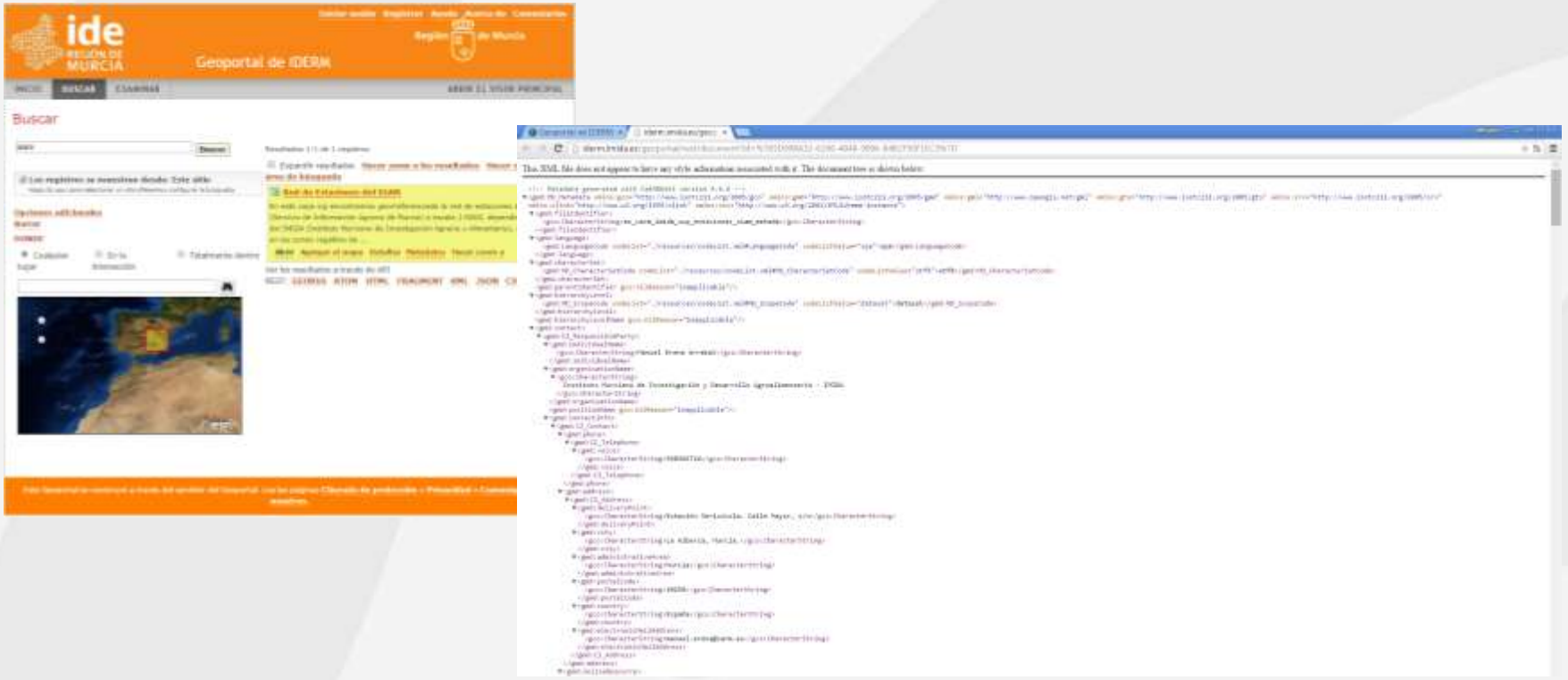
- Generation of INSPIRE GML “Environmental Measurement Facilities”
- Generation of INSPIRE ATOM Feeds
- Writing of stations into SOS
  - Http “InsertSensor” calls
- Writing of observations into SOS
  - Creation of “InsertObservations”
  - 45 Mio values

FME Workspace for INSPIRE Transformation

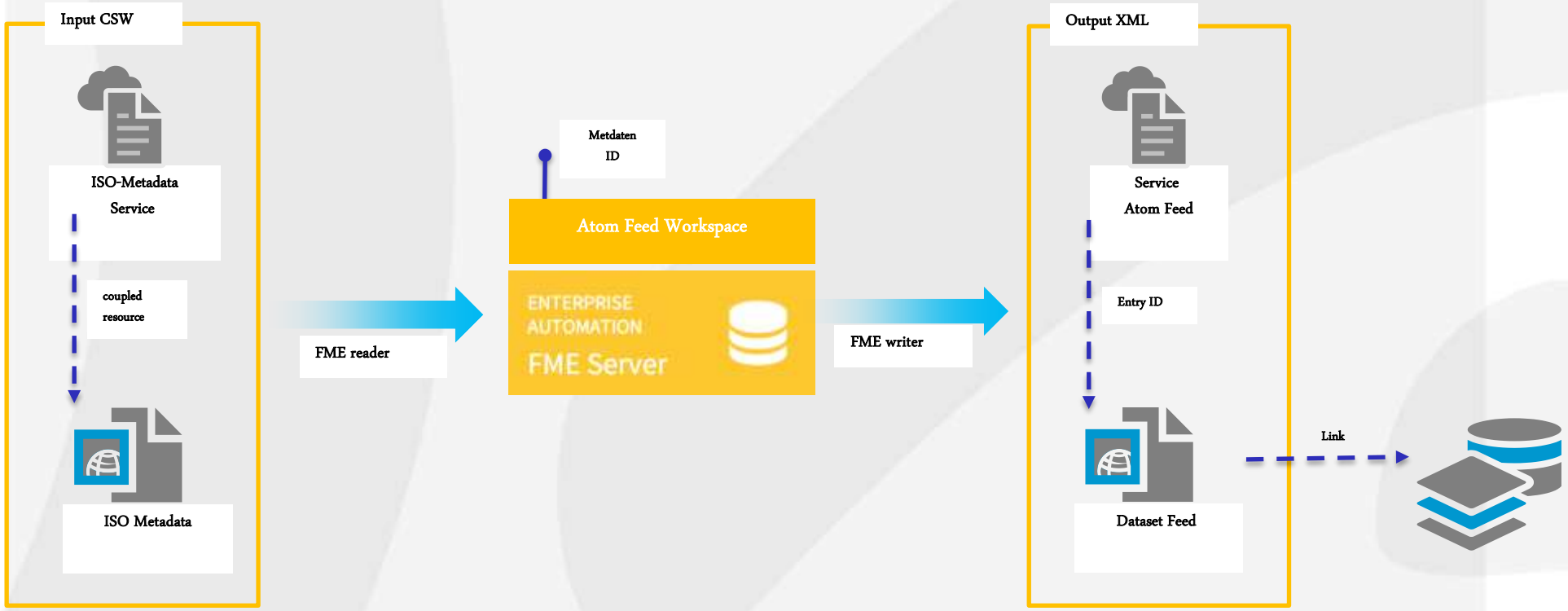


Data Source for ATOM Feed

- Metadata of SIAM weather stations

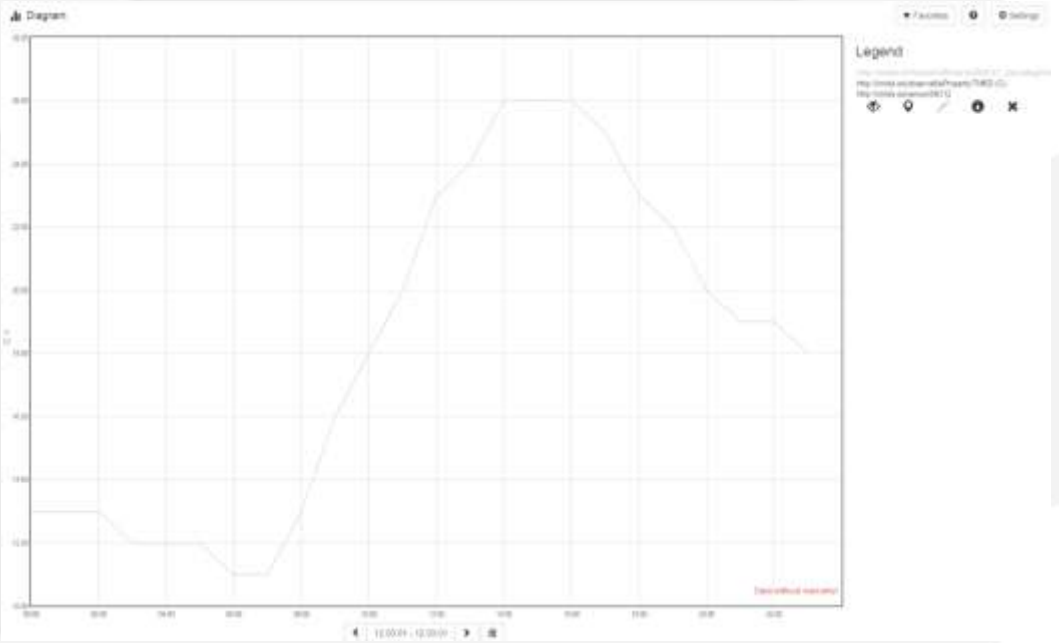


Generation of INSPIRE ATOM Feed (ISP4FME 2.0)

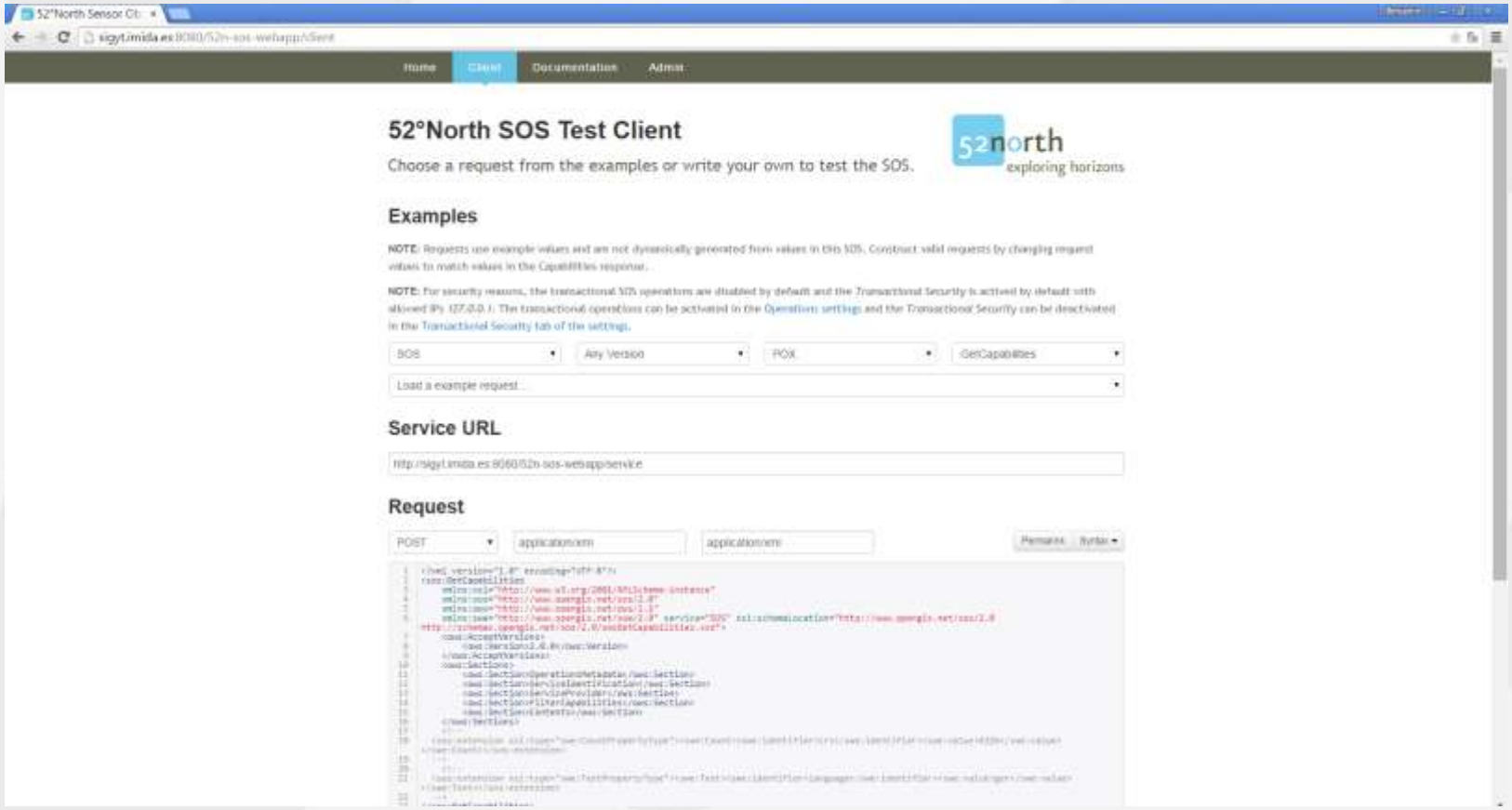


SOS services + client for observations

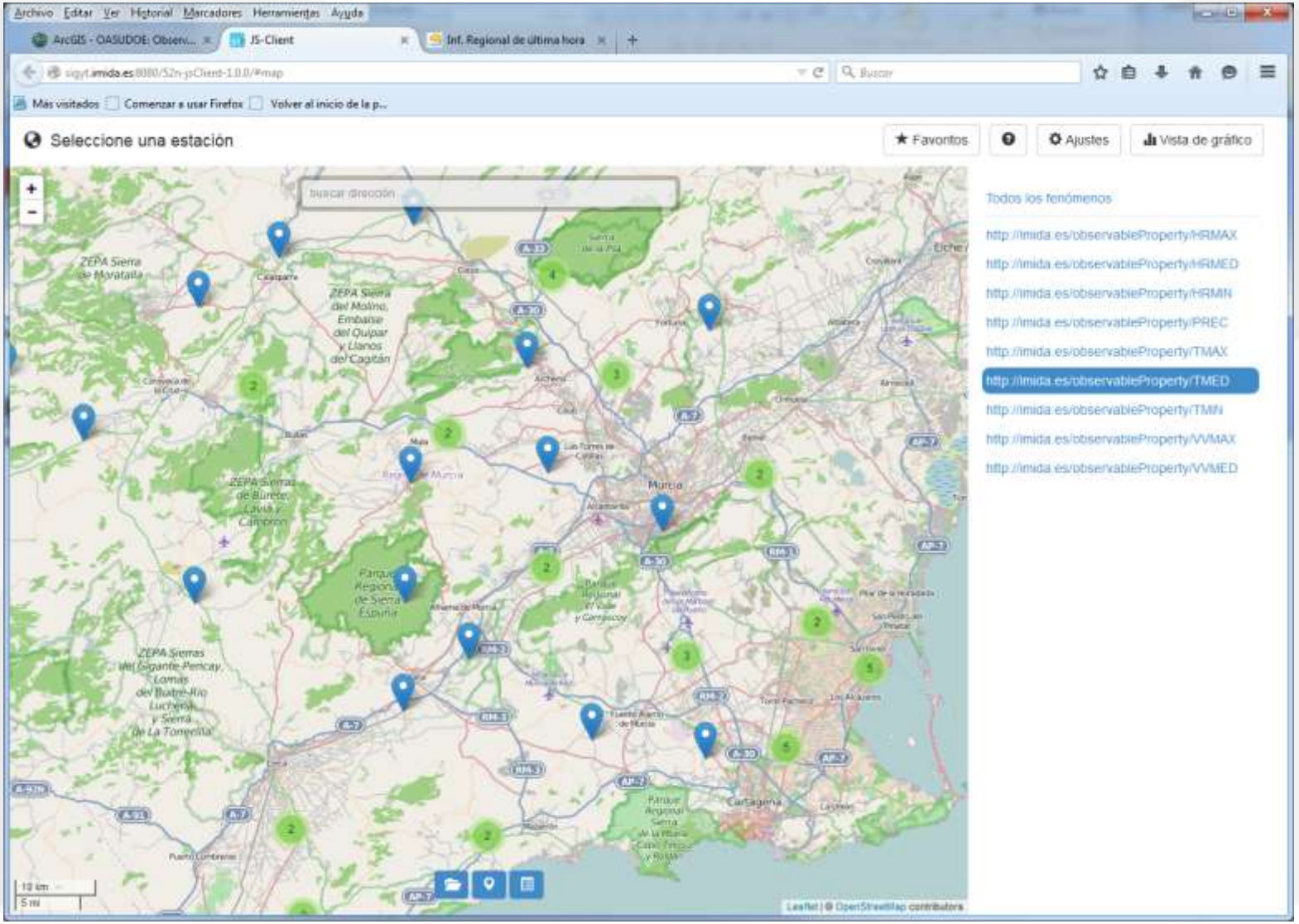
- Visualize stations and observations data
- Set-up JavaScript Client for SOS



SOS Client


Home
Client
Documentation
Admin
52°North SOS Test Client
Choose a request from the examples or write your own to test the SOS.
52north
exploring horizons
Examples
Service URL
Request

Instituto Murciano de Investigación y Desarrollo Agrario - IMIDA



Lessons Learned

- FME Processes can be updated and extended with further themes/ phenomena
- FME processes can be automated (actualization of data)
- SOS provides OGC standardized interface for observation data
  - direct and flexible access to observation data of the weather stations with SOS clients
  - significant benefit in the use of sensor data

Project outlook

- Process data on site
- Add real time observations to SOS
- Automation of data transformation
  - Hourly data update
  - (FME Server Scheduler & Notifications)
- Add more phenomena
- Adjust mapping

Instituto Murciano de Investigación y Desarrollo Agrario - IMIDA

SIGyT team.

Person	Title	Contact details
Manuel Erena	Agronomist engineer (Coordinator)	manuel.erena@carm.es
Pedro García	Software engineer	pedro.garcia5@carm.es
Diana Sánchez	Software engineer	diana.sanchez@carm.es
Joaquín F. Atenza	Geographer	joaquinf.atenza@carm.es
Juan Antonio López	Software engineer	juanantonio.lopez@carm.es
Marta Sánchez	Degree in communication	marta.sanchez@carm.es
Daniel I. Paya Pina	Agronomist engineer	danieli.paya@carm.es

con terra / 52° North team.

Person	Title	Contact details
Benjamin Quest	Technical sales	b.quest@conterra.de
Sören Dupke	Software engineer	s.dupke@conterra.de
Dr. Simon Jirka	Sensor Web Community Lead	s.jirka@52north.org
Carsten Hollmann	Software developer	c.hollmann@52north.org

Webinar: July, 2nd 2015, 3:00 p.m.

- Simplifying INSPIRE Challenges with FME
  - INSPIRE Schema Mapping made easy
  - Generation of INSPIRE GML and ATOM Feeds
  - INSPIRE Solution Pack 2.0 (incl. annexes I, II, III)

- www.conterra.de/inspire-webinar