

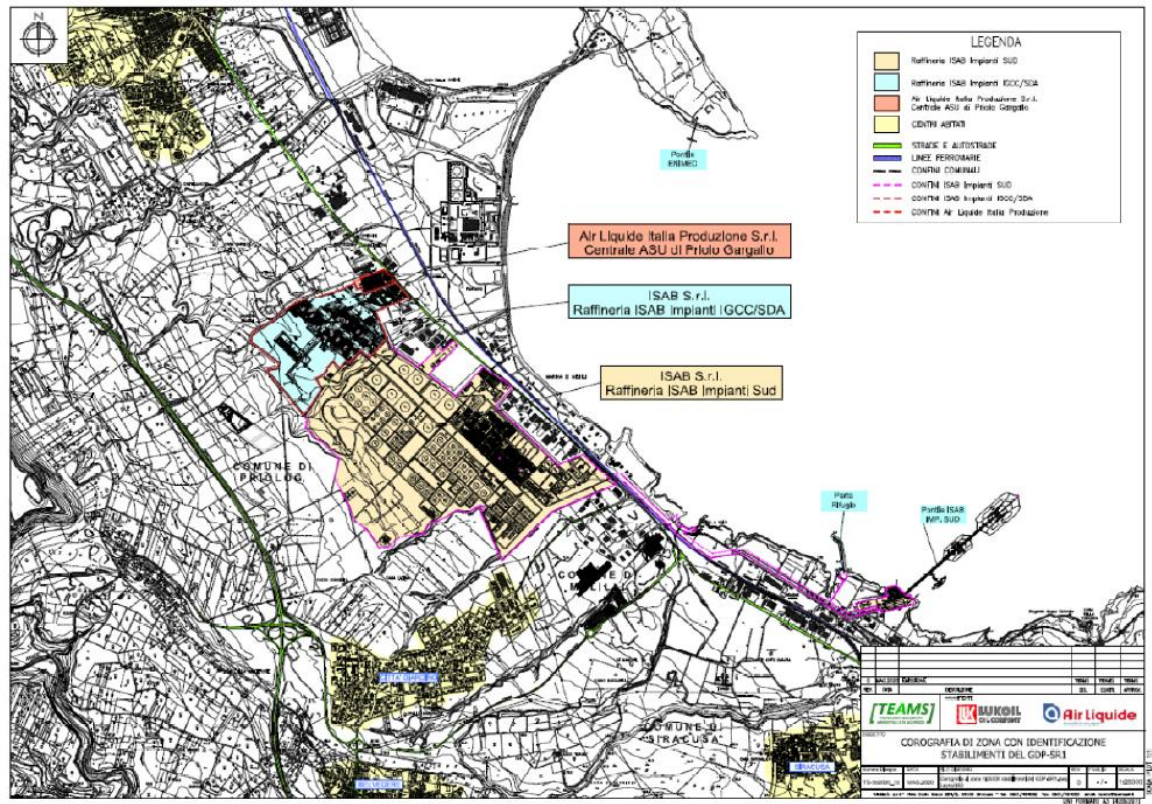
The Priolo-Melilli-Augusta hub (Industrial area of Siracusa): Update work on the integrated area risks study

Presentation of the first evidence and critical issues that emerged in the local context.

Siracusa 01/10/2025

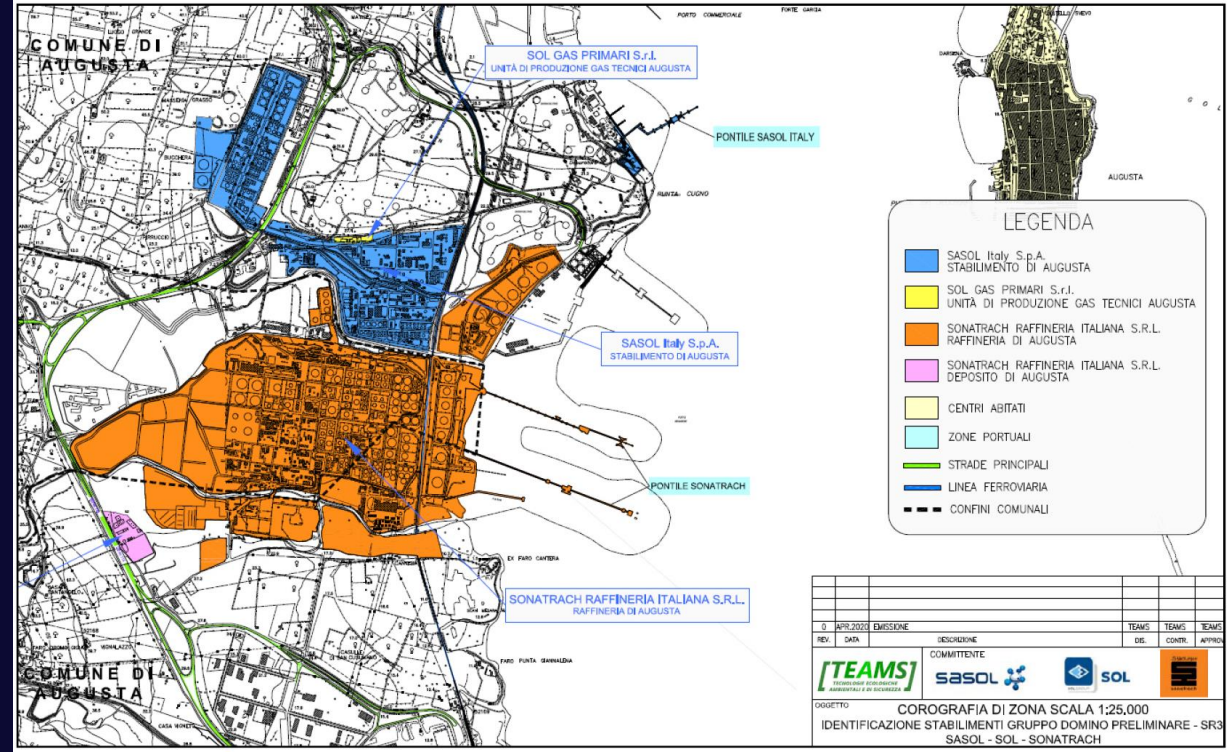
Ing. Vincenzo BARTOLOZZI – ARPA Sicilia

Ing. Francesco CARUSO – Direzione Regionale VVF Sicilia



Domino Group 2:

Versalis
 ERG Power
 Priolo Servizi
 Air Liquide
 Isab
 Syndial



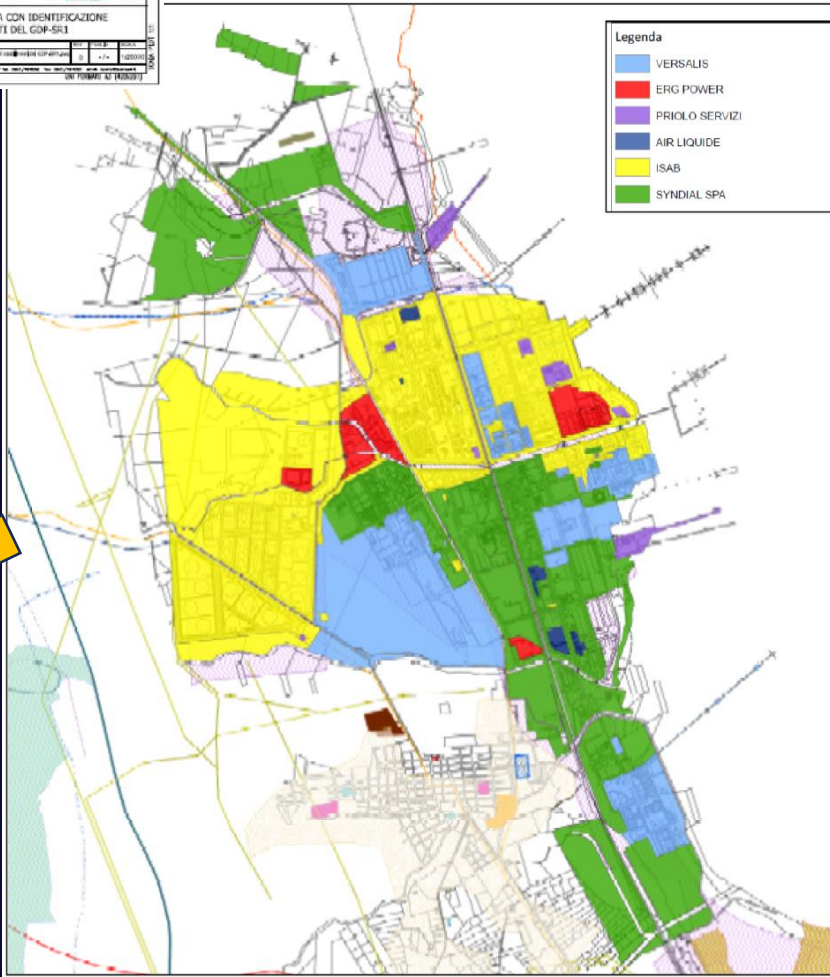
Domino Group 3:

Sasol
 SOL
 Sonatrach

Domino Group 1:

Isab Sud
 Isab IGCC
 Air Liquide

The GD_SR2 has been classified as definitive GD, due to indirect domino effects (toxic releases)



The CTR Sicilia has decided to identify the SSIA area including all 3 GD, using the criteria present in the attachment E al D.Lgs 105/2015 (presence of a GD and interconnections with pipelines and road transport)

The study includes the territory characterized by the hazardous substances transport (road, pipeline, and maritime), limited to the north (the SS114 state road) and to the south (the town of Syracuse)

OROGRAPHY: the gulf of Priolo-Augusta constitutes itself a barrier to the spread of the consequences of accident scenarios;

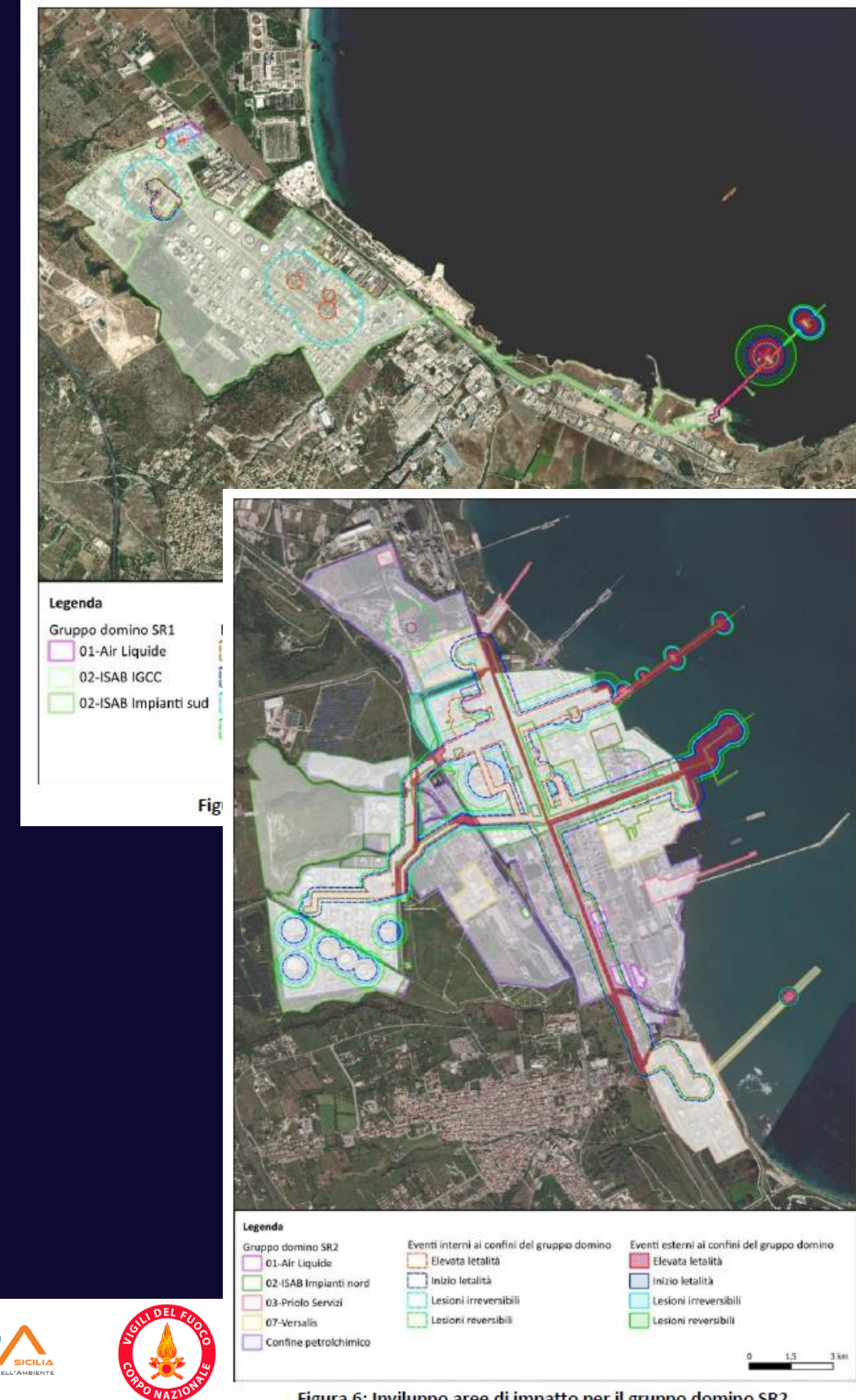


The study has been split up in 3 parts

1. Representation of accident scenarios associated with industrial plants

Information from
Security Reports

The study also illustrates
the maps of the accident
scenarios that have an
impact on the external
areas of industrial plants
(both towards co-located
industrial plants)



2. Representation of the area risk associated with the transport of dangerous substances

1. Definition of reference routes (road, pipeline, and maritime).

2. Definition of accident rates for different type of transport

3. Definition of consequence assessment models.

4. Definition of risk classification criteria (individual risk, social risk, Domino effects)



Figura 6: Involuppo aree di impatto per il gruppo domino SR2.

3. Representation of the area risk associated with the transport of dangerous substances

Individual risk

Geographic risk associated with the position of a person in the territory subject to the potential effects of accident scenarios, regardless of the actual presence of people in this area

Social risk

Risk associated with people actually present in the area, and subject to the potential effects of accident scenarios associated with the activity of the industrial plants

Domino effect

Risk due to accident scenarios from industrial plants associated with the risk of hazardous substances transport

Representation of the risk associated with road transport

- Census of industrial vehicles in the area
- Definition of the route used by industrial vehicles
- Definition of accident rates for different type of vehicle (liquid fuels, LPG, oxygen, hydrofluoric acid) using internationally databases



Road transport – Individual Risk

- Maximum Value: 10^{-5} occ/year
- In the Northern area most of the traffic is concentrated in the direction of Catania city
- Definition of accident rates for different type of vehicle (liquid fuels, LPG, oxygen, hydrofluoric acid) using internationally databases
- Two residential zones: 1.0×10^{-6} occ/year
 - ❑ Priolo: area of 80 meters above to the road
 - ❑ Città Giardino: area of 20 meters above the road



Representation of the risk associated with pipeline transport

- Census of interconnection pipelines of industrial plants
- Definition of release rates for pipelines
- Referencing databases



Pipeline transport – Individual Risk

- Maximum Value: 10^{-7} occ/year
- Possible involvement of road SP ex SS114; 10^{-7} occ/year (marginal risk)
- The individual risk values are approximately one order of magnitude lower than those of road transport



Maritime transport

Representation of the risk associated with maritime transport

- Census of loading and unloading activities
- Definition of containment loss rates from cargo ships referring to internationally databases
- Maximum Value: 10^{-7} occ/year in the area corresponding to the entrance of the port of Augusta
- In the connecting sections towards the jetty of a industrial plants, the frequency of the iso-risk curves is 10^{-8} occ/year

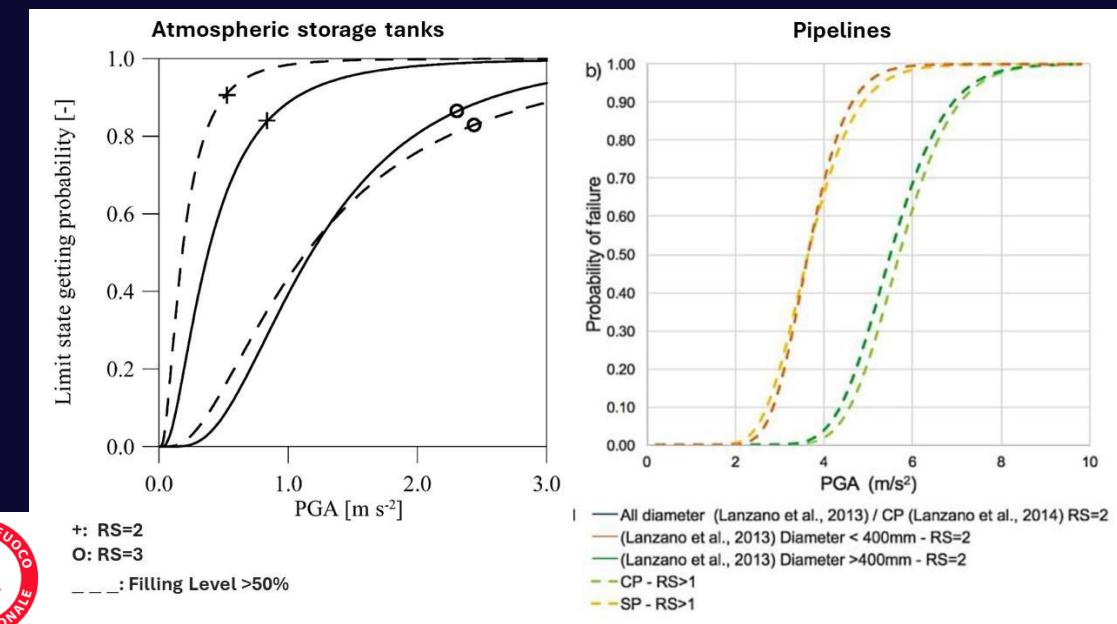
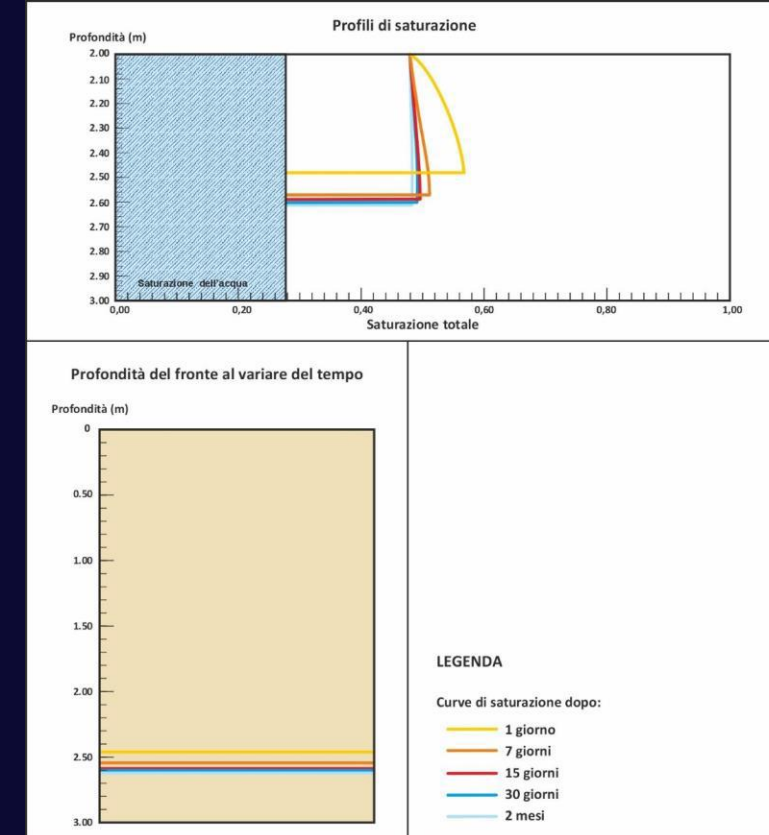


NATECH Risk

The study has been focused exclusively on transport in the pipeline.

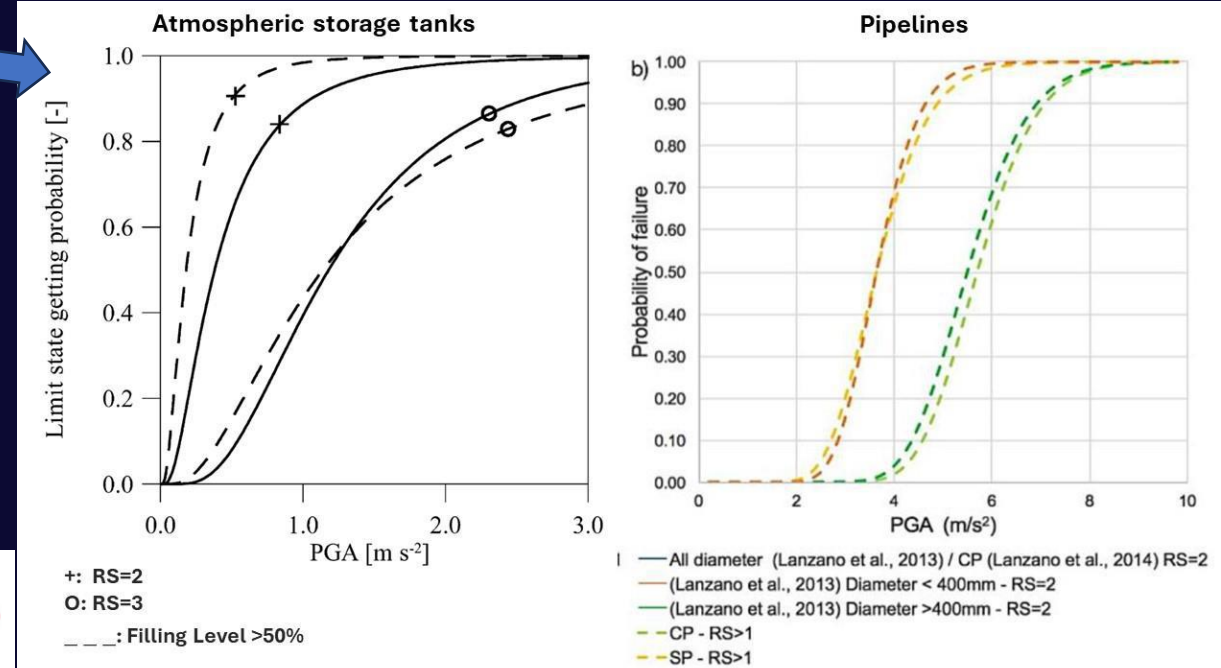
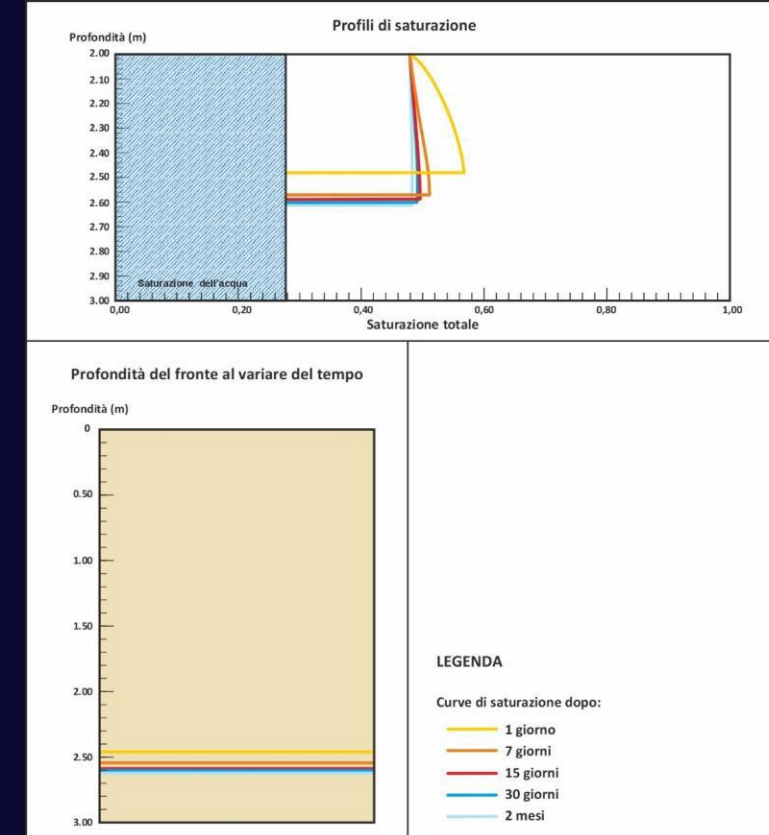
Why?

1. Industrial plants are interconnected by pipelines, managed by different industrial plants
2. The pipeline routes are fixed in the territory
3. Road and maritime transport involve different level of local responsibilities



NATECH Risk

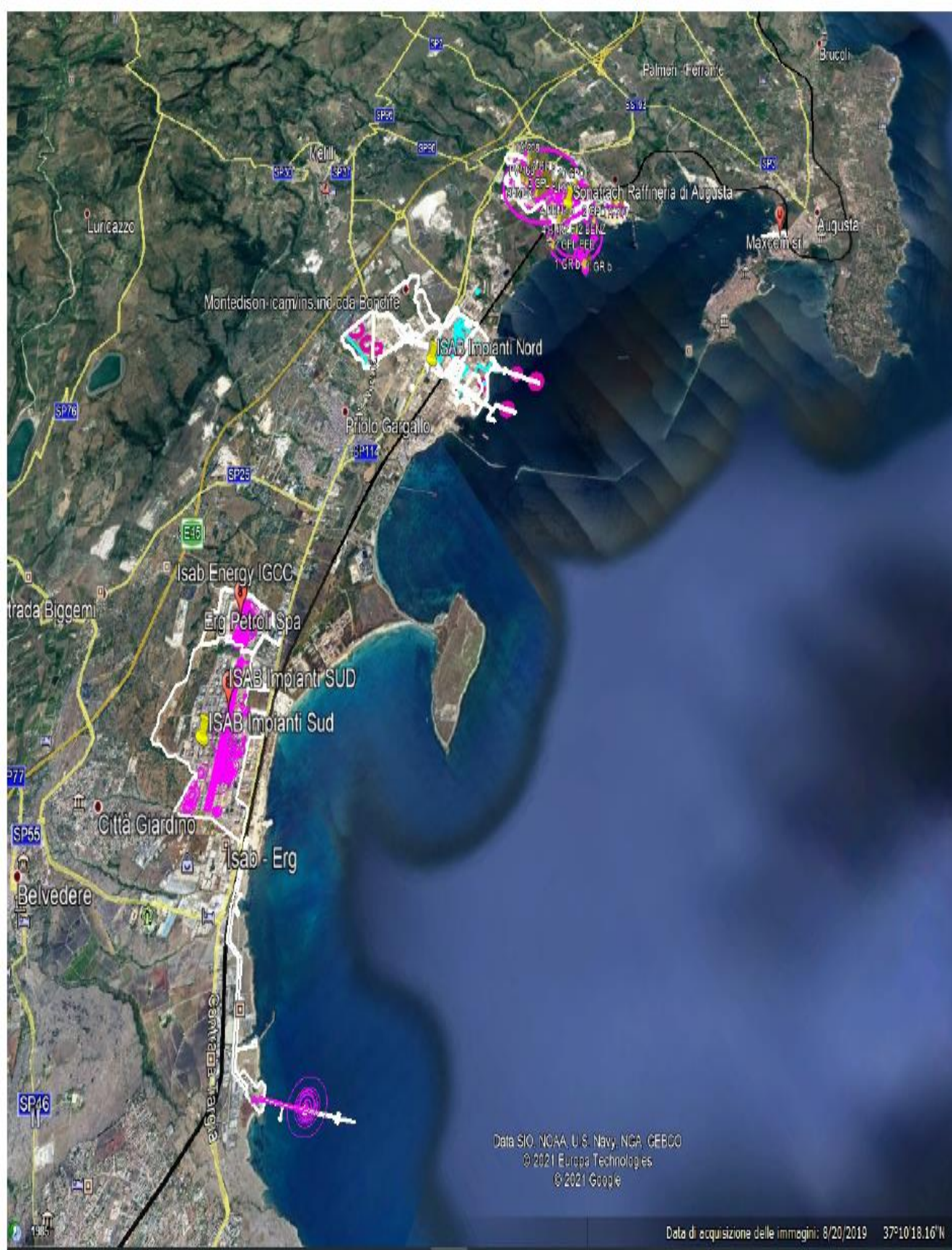
- Regarding the road transport, the risk concerning flooding, tsunami and tornado, can be managed with emergency/civil protection.
- The SSIA study demonstrates that the general seismic vulnerability of underground pipelines is lower than that of above-ground equipment.

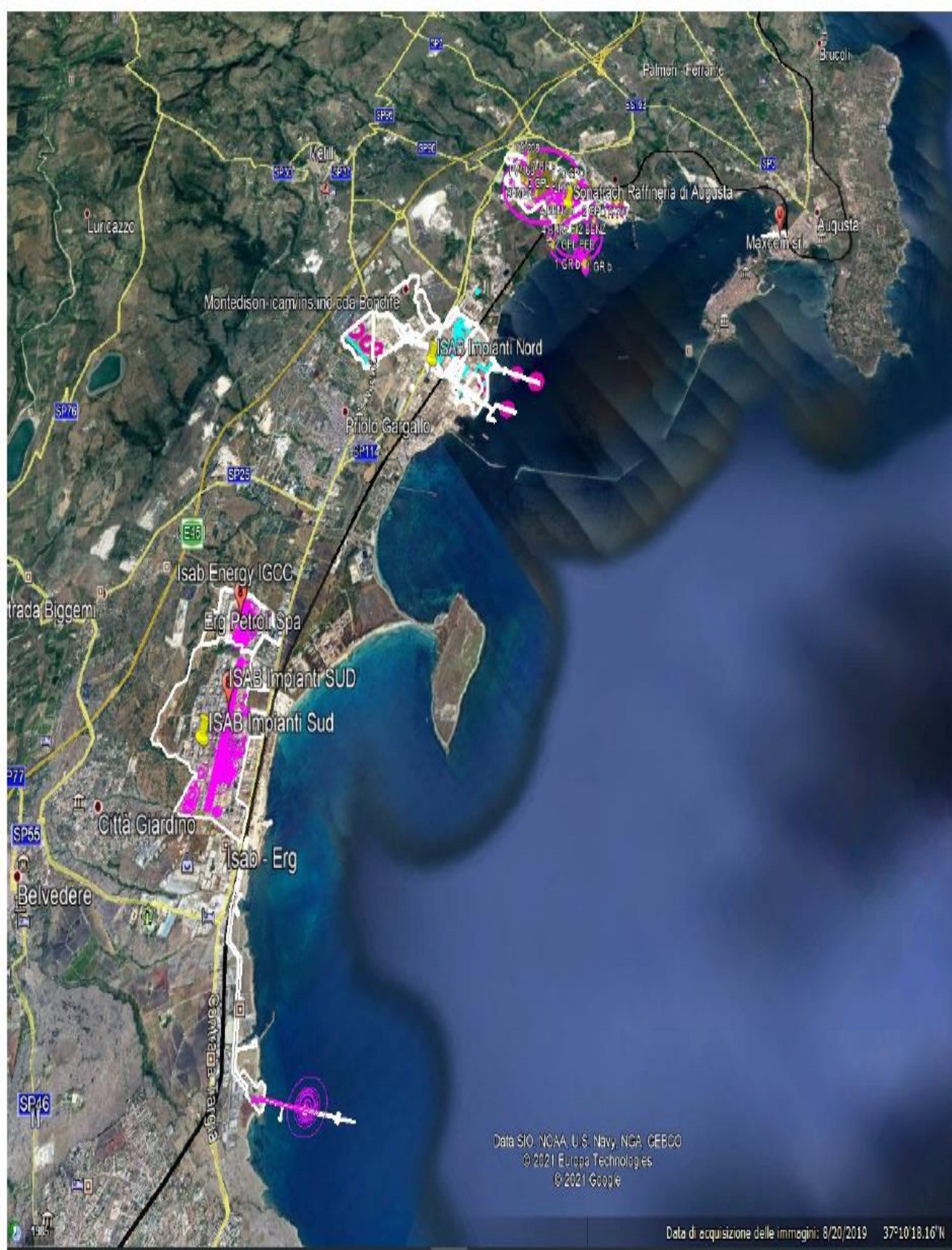


Integrated area risk study in industrial area of Siracusa - SSIA 2025

Project timelines:

- Assignment of working group by the CTR Sicilia (Regional Technical Committee at the National Fire Brigade Corps) – march 2021;
- Final resolution of the CTR, Domino Area - Request for definition of an Integrated Area Risk Study in industrial area of Syracuse – december 2023;
- Presentation of the new SSIA report by company managers - – december 2024;



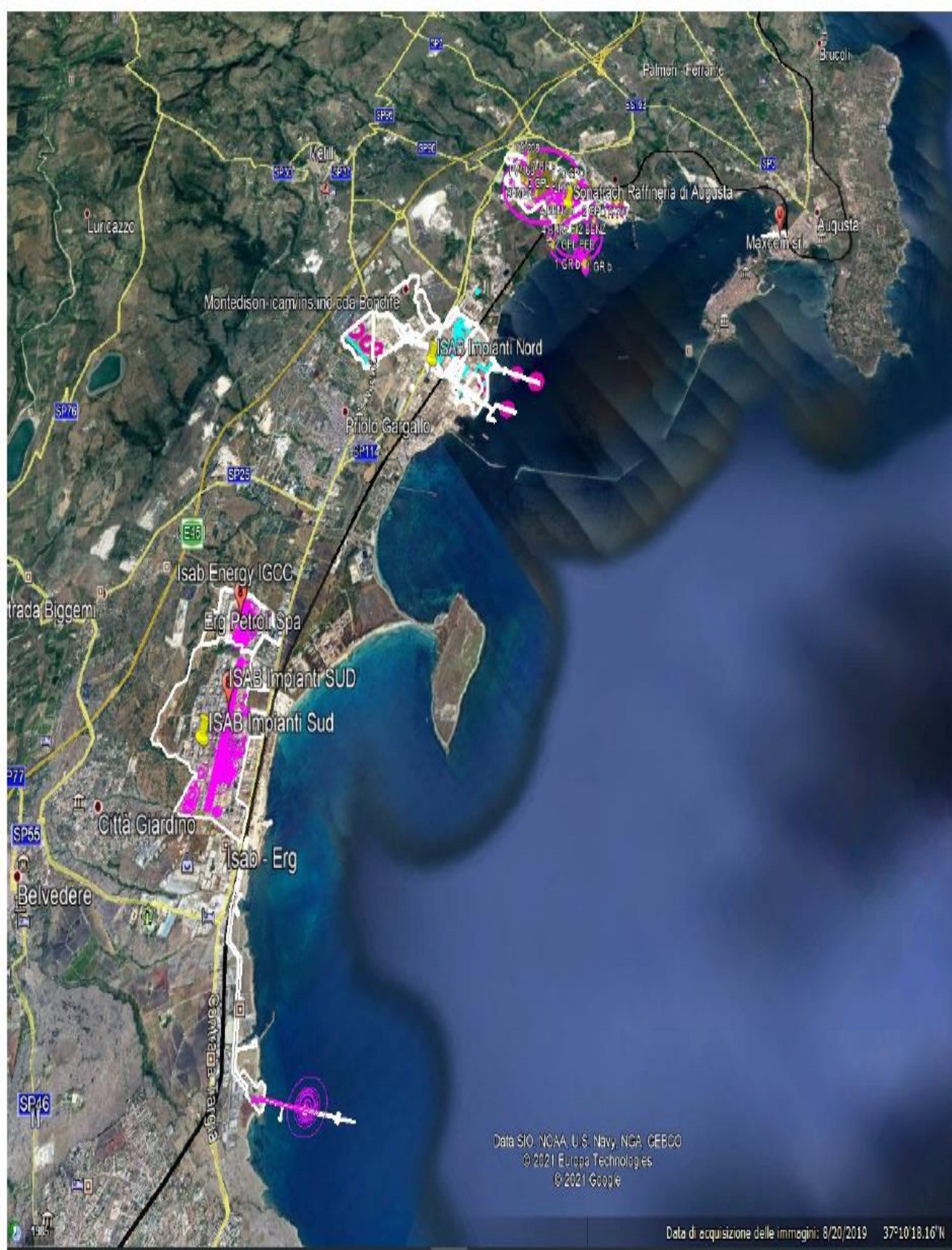


Composition of the CTR commission

President/Coordinator: Director of National Fire Brigades

Public members and local experts:

- Prefecture of Syracuse
- National Fire Brigades
- INAIL, National Institute for the Prevention of Accidents at Work
- Sicilian Region
- ARPA Sicilia, Regional Agency for Environmental Protection of Sicily region
- Port Authority
- Municipal Authority

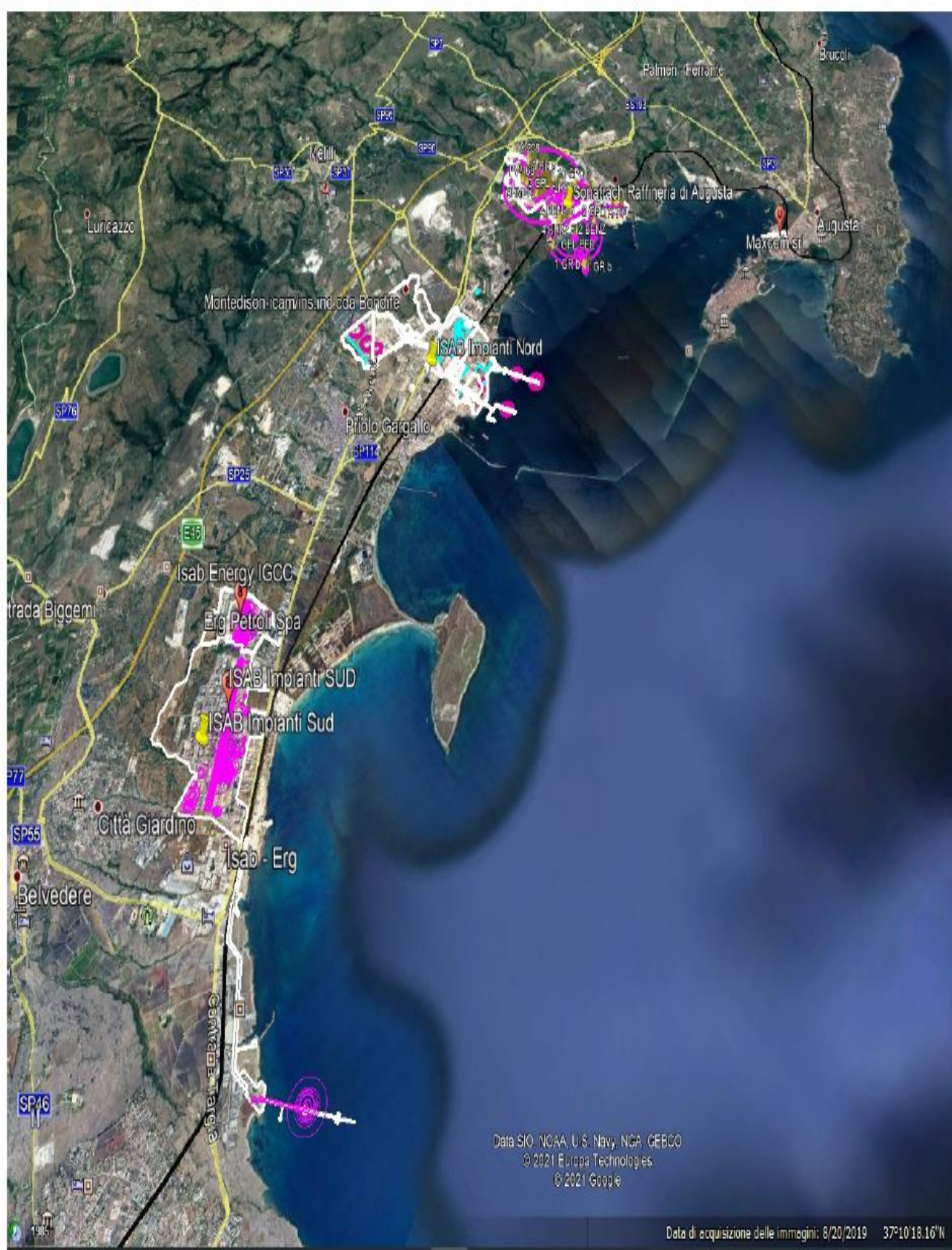


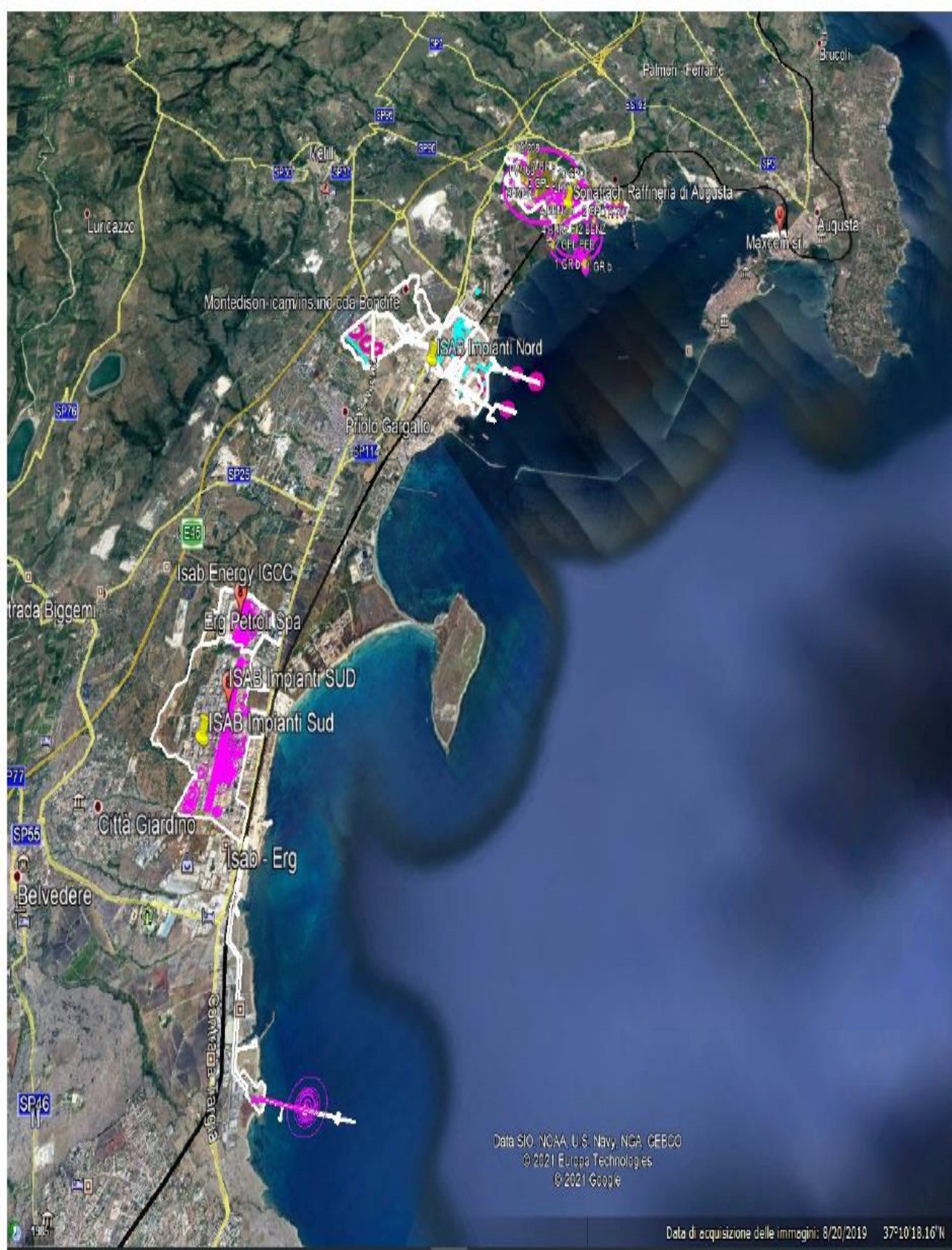
The Sicilian Regional Technical Committee (CTR) commission has begun the work in February 2025 with the establishment of the commission and the establishment of several working groups.

Specifically, the working groups will address the integrated area risk assessment related to:

- technological risk (Industrial plants)
- transportation risk (maritime, road, rail, pipeline)
- environmental risk

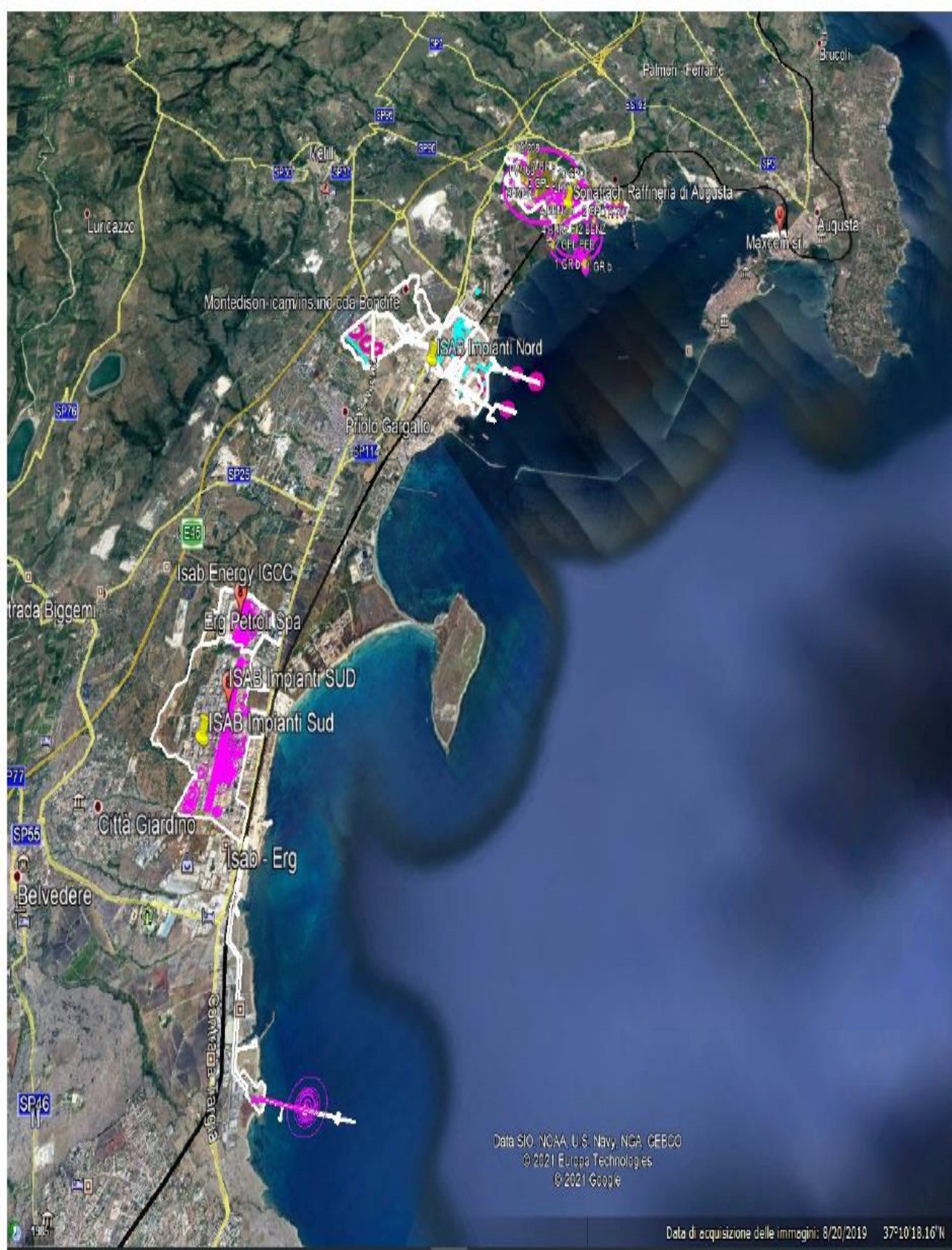
The first request of CTR commission regarding the documentation submitted in the SSIA2025 report, specifically regarding the responses of the several industrial plants to the recommendations expressed in the SSIA2008 project, taking into account the transformations that occurred in the industrial area between 2008 and 2025 in the industrial area.





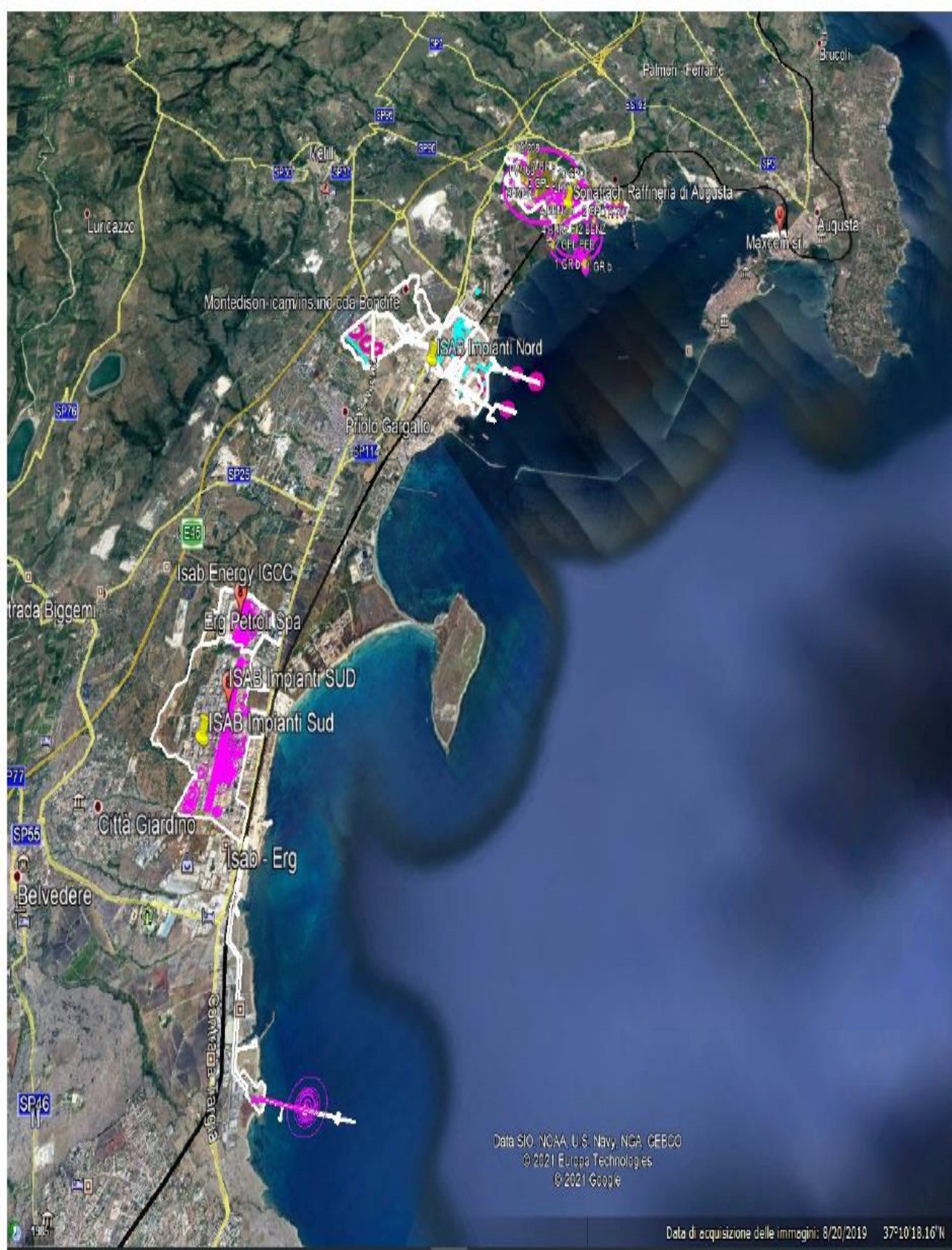
The other questions concerned:

- 1) Identification and characterization of risk sources: if data relating to road transport and vehicular traffic concern only the dangerous/industrial transport or whether, if data relating also to civil transport were included in the study.
- 2) Furthermore, with regard to maritime transport, integrating data regarding potential accidents that may occur on cargo ships and that could impact the industrial plants.



3) Identification of domino effects: the effects due to the possible interactions of the accident scenarios originating from the industrial plants with the accident scenarios of dangerous substances transport (pipelines and roads)

4) Analysis of accident scenarios associated to natural disaster in the area (NATECH risks), regarding the pollution in the sea/port area, due to the dangerous substance release



5) Recomposed risk management: request of specific information regarding the application of the “PHASt” software in the context of risk management and some specifications on the routines used;

6) Management of social risk: request of specific information about the workers, employed within RIR plants, which could be considered in the social risk calculation, regarding in particular their characteristics, in terms of training/education in dealing with emergencies...

**The deadline to submitting the studies has been set for September 30, 2025... yesterday...
...to be continued**



Thanks for your attention

Contact to:

Francesco Caruso

Direzione Regionale della Sicilia Corpo Nazione Vigili del Fuoco

Piazza Verdi 16 - 90139 - Palermo

mail to: francesco.caruso@vigilfuoco.it

mob. phone: [+39 3515235057](tel:+393515235057)

Vincenzo Bartolozzi

ARPA Sicilia

Lungomare Cristoforo Colombo - 90149 - Palermo

mail to: vbartolozzi@arpa.sicilia.it

mob. phone: [+39 3286336316](tel:+393286336316)