MARINE STATION

Name:	Piattaforma Avanzata LabOratorio Mare Adriatico (PALOMA)
Location (lat-long):	Northern Adriatic Sea - Gulf of Trieste (GoT), 45.6183 - 13.5650 (WG 84)
Environment:	Continental Shelf Sea
Operational history:	2008 – present.
Scientific purpose:	Investigating the long-term variability of air sea fluxes of greenhouse gases (CO_2) in a region affected by intense land ocean interactions, intense natural processes and anthropogenic emissions.
Station description:	PALOMA is the only fixed marine station in Italy measuring both atmospheric and dissolved CO_2 in continuous/quasi-continuous. The station further collect other basic parameters (pH, total alkalinity, dissolved inorganic nutrients, dissolved oxygen) on discrete samples, at lower frequency (monthly). The Gulf of Trieste (GoT), lying in the northermost part of Mediterranean basin, is affected by meteorological conditions leading to large variations of air and sea surface temperatures. Dense water formation can occur during severe winters. North Adriatic Dense Waters (NAdDW) spread southward and contribute to the Eastern Mediterranean thermohaline circulation cell (Gacic et al. 2001). The area can also be affected by intense air sea CO_2 fluxes (Cantoni et al. 2012, Turk et al. 2010) resulting in ocean acidification (Luchetta et al., 2010). Marine waters receive the inflow of several rivers (Isonzo, Timavo, Rizana) draining carbonatic basins and thus transporting high alkalinity (and nutrients) to the sea. The marine ecosystem of GoT is productive and sustain relevant economic activities (fishery and aquaculture). GoT can be considered as representative of the North Adriatic basin. The surrounding coast is narrow and steep, lying between the sea and the Carst highland (300-400 m high). Land hosts woods with a rich variety of vegetation, ranging from Mediterranean species to those typical of central Europe. The area is affected by many anthropogenic activities and characterized by high population density, industrial activities and maritime traffic. Trieste harbour hosts the terminal of a big oil pipeline (delivering petrol to central Europe). Roads,

	highways and railways go through the territory**.** Trieste (about 200.000 inhabitants), Monfalcone (50.000) and Koper (50.000) are the main towns of the area . PALOMA station infrastructure is located in the centre of the GoT, on a 25 m deep seafloor, at approximately 8 nm (about 15 km) from Trieste, 7 nm (13 km) from Grado and 5 nm (9 km) from Piran (Slovenia). Thanks to the co-operation among ARPA, Civil Defence and CNR-ISMAR, PALOMA provides continuous/quasi continuous observations of ICOS parameters. The CNR observatory is equipped with connection for near real-time data delivery.
Measured ICOS core parameters:	pH, total alkalinity, dissolved inorganic nutrients, dissolved oxygen, T and sal (*monthly frequency*). *In continuous (3m below the seasurface)*: seawater carbon dioxide (pCO_2), dissolved oxygen*,* sea temperature and salinity.
Measured ICOS desirable parameters:	Atmospheric carbon dioxide (xCO_2) *in continuous*. Total dissolved Organic Carbon (TOC). Chlorophyll. Wind speed and direction. Atmospheric pressure, air temperature, relative humidity.
Website/data portal:	http://www.ismar.cnr.it ; http://www.ts.ismar.cnr.it/node/84
Responsible organization:	National Research Council - Institute of Marine Science.
Principal investigator:	Anna Luchetta (anna.luchetta@ts.ismar.cnr.it)
Funding:	National Research Council of Italy Ministry of Education, Universities and Research, Italy European Community

Fig 1. The site of the coastal observatory PALOMA CNR ISMAR

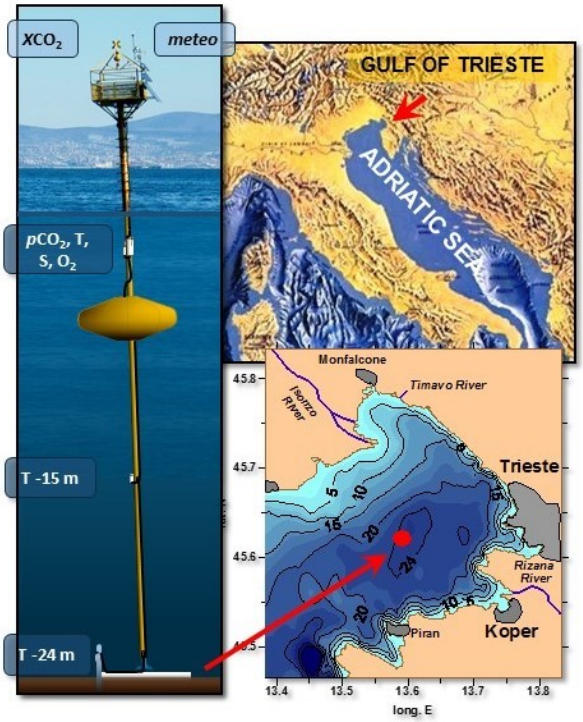

Fig 2. The infrastructure equipped with instruments acquiring CO_2 data in continuous. On the right: discrete sampling of water column.