The NOAA Climate & Global Program has its origins in the Tropical Ocean Global Atmosphere (TOGA) Program. In 1985 NOAA establish a line of funding to support the TOGA Program and was selected to host the interagency TOGA Project Office. NOAA's funding was mainly directed at establishing the observing system required by TOGA. In 1990, NOAA identified a line of funding for the Climate & Global Change Program and established the Office of Global Programs (OGP) to manage the program. The presentation will highlight a number of the major scientific successes of the C&GC Program focusing on elements of the climate observing system first established by the C&GC Program. Today the NOAA Climate Program Office (CPO) continues the tradition of the C&GC Program in support of NOAA's mission.
Tropical Atmosphere Ocean Array
ATLAS Mooring System

ATLAS System Overview
Quarterly Mean SST (°C) and Winds (ms⁻¹)
Five Day Mean Heat Content $2^0$S to $2^0$N Average
Global Drifter System

- **Surface float**: Designed for moving on the surface with the currents.
- **Antenna**: The drifters transmit the data they collect as well as their position via satellite.
- **Sensors**: Sea Surface Temperature sensor and various measuring systems.
- **Drogue**: The buoys have some form of subsurface drogue or sea anchor.

Source: NOAA
Sea Surface Temperature Anomaly

Analysis Time: 06z Nov 29 2018
Annual Mean Drifter Speed (cm/s)
Repeat Hydrography Program
Global Ocean CO$_2$ Inventory
Decadal Change in Dissolved Inorganic Carbon
Carbon Flux Monitoring System
Free Troposphere CO2 2009-MAR-20
Typical USCRN Instrumentation
10cm Observed Soil Moisture
Contiguous U.S. Average Temperature Anomaly
Backup Slides
Ship of Opportunity CO$_2$ Consortium

Surface water pCO$_2$ along SOOP-CO$_2$ transects (1990-2013)
Produce Seasonal CO₂ Flux Maps

- Shipboard sampling pCO₂, SST, SSS
- Co-located satellite data
- Regional satellite SST & color data
- Wind data
- Algorithm development: pCO₂ = f(SST, color)
- Apply algorithm to regional SST & color fields to obtain seasonal pCO₂ maps
- Flux = k s⁻² pCO₂

Algorithm development: Gas transfer, k = f (U₁₀, SST)