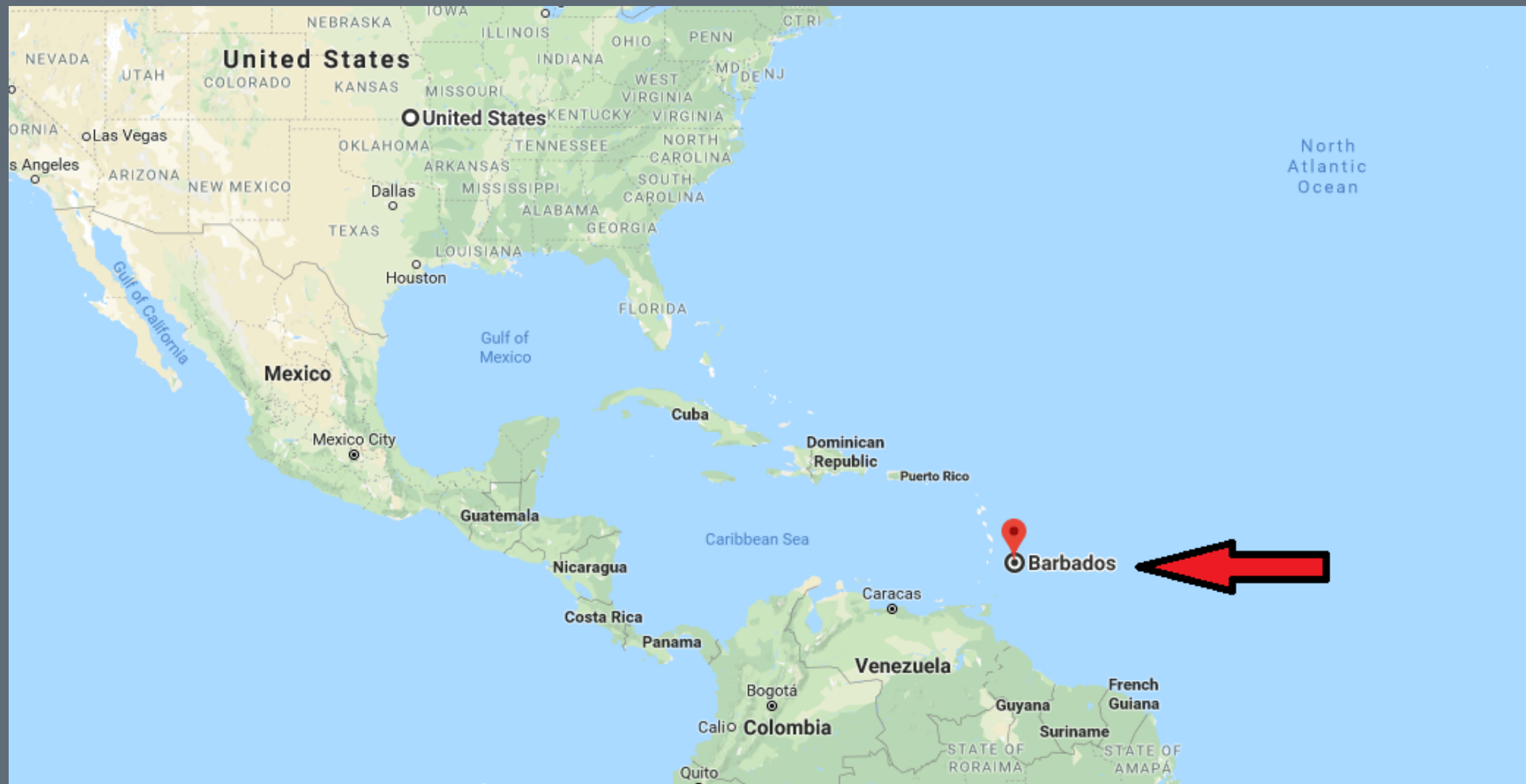


# Barbados as a potential GRUAN site

*Andrea M. Sealy, Ph.D.  
Meteorologist*

*Caribbean Institute for Meteorology and Hydrology (CIMH)*

*<http://www.cimh.edu.bb>*



# About the CIMH

- Training and research organisation established in 1967 (has had various name changes)
- Responsibility for the operation of the CIMH rests with the sixteen Commonwealth Governments which comprise the Caribbean Meteorological Organisation (CMO)
- Mission- to assist in improving and developing the Meteorological and Hydrological Services as well as providing the awareness of the benefits of Meteorology and Hydrology for the economic well-being of the CIMH member states.
- Training, research, investigations, provision of related specialised services and advice
- The sixteen member countries participating in the CMO are:
  - Anguilla, Antigua and Barbuda, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts/Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands

# Functions of the CIMH

- **WMO Regional Training Centre** - train various categories of meteorological and hydrological personnel
- A **centre of research** in meteorology, hydrology and related sciences
- **Regional Climate Data Centre** - Data collection, storage, & dissemination
- **Regional Instrument Centre** – Develop, maintain, repair, and calibrate meteorological and hydrological instruments
- **Regional Centre of Excellence for Training in Satellite Meteorology**
- **WMO Regional Climate Centre**
- **Caribbean Centre for Climate and Environmental Simulations**
- **WMO Pan American Centre for Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS)**
- **Advisor to regional governments and provide specialized services to industry**

# Barbados Meteorological Services (BMS)

- Part of Cooperative Hurricane Upper Air Station (CHUAS) network of upper-air stations covering the Caribbean region
- Most stations:
  - 12Z observation once a day outside of hurricane season
  - Hurricane season- dual radiosonde soundings at 00Z and 12Z
- <http://barbadosweather.org/>



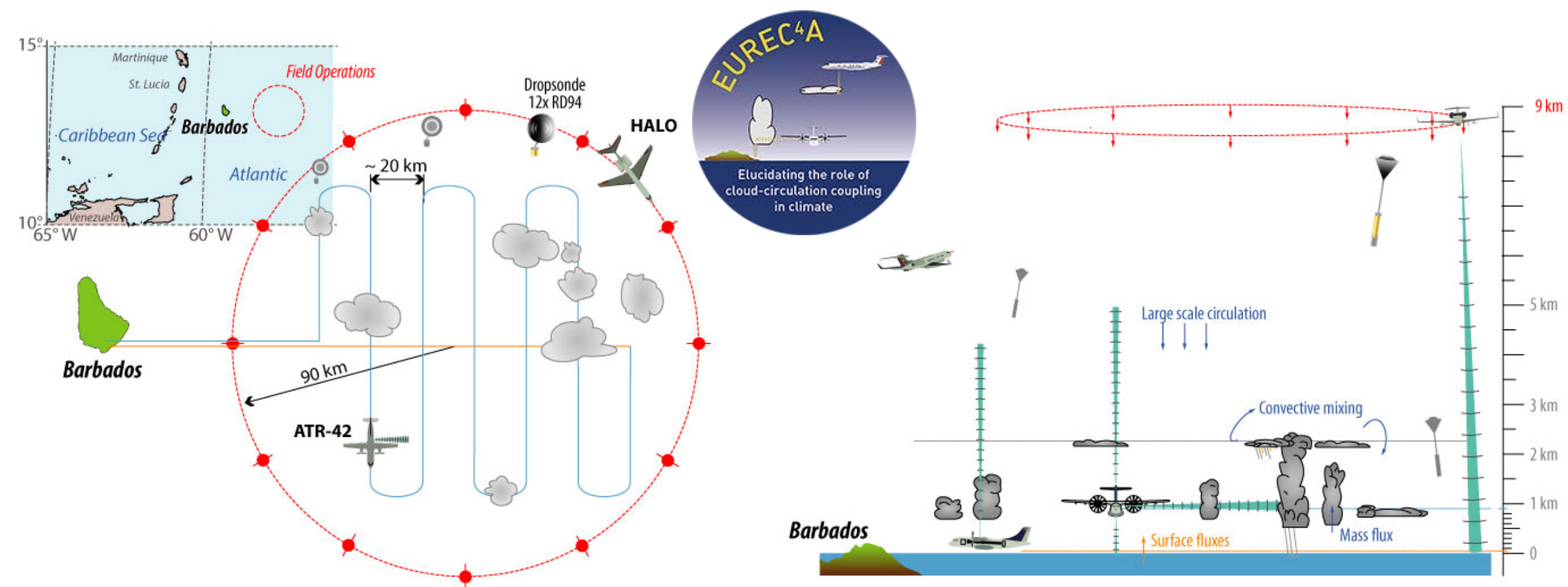


# Barbados Cloud Observatory

- The Barbados Cloud Observatory, Deebles Point (in operation since April 1st, 2010) is a joint project of the:
  - Max Planck Institute for Meteorology, Hamburg, Germany
  - Caribbean Institute for Meteorology and Hydrology, Barbados
- Additional institutes are contributing to BCO through their supply of instrumentation or intensive field campaigns on Barbados:
  - Institute for Meteorology and Climate Research, Karlsruhe Institute for Technology;
  - Leibniz Institute for Tropospheric Physics
  - Remote sensing group of Prof. Susanne Crewell (University of Cologne)
  - Aerosol group of Prof. Joseph Prospero (RSMAS, University of Miami)



	Name	Description	Values measured
1	CORAL RADAR	Vertically pointing Ka band cloud-radar (MIRA36)	Radar-reflectivity, Doppler velocity, LDR
2	Wind LIDAR	1,5 $\mu$ m scanning wind liadar (StreamLine Pro)	Vertical and horizontal wind in the lower 2km
3	LICHT LIDAR	Inhouse developed RAMAN Lidar @ 355, 532, 1064 nm	Particle backscatter & extinction coef., particle depol. ratio, water vapor mixing ratio, temperature, relative humidity
4	Micro Rain RADAR	24 GHz FMCW radar for rain detection (MicroRainRadar)	Radar-reflectivity, drop-spectrum, rain-rate, LWC
5	KATRIN RADAR	Scanning Ka band cloud radar (MIRA36)	Radar-reflectivity, Doppler velocity, LDR
6	Weather sensor	Basic ground weather station (VAISALA WXT-520)	Temperature, humidity, windspeed and direction
7	Radiation Station	Suntracker with shaded and non-shaded pyranometer, shaded pyrgeometer and pyrheliometer	Direct, global and diffuse shortwave radiation, longwave downwelling radiation
8	BCOHAT	Scanning humidity and temperature profiling radiometer (HATPRO)	Brightness temperatures, humidity and temperature profiles
9	Ceilometer	1064 nm laser ceilometer (CHM 15K)	Cloudbase, cloudlayers
10	Disdrometer	Optical disdrometer ODM470	Rain rate, dropsize distribution (0.1 - 22 mm)
11	All-sky imager	Inhouse developed visible and IR all sky imager	Visible and IR pictures



EUREC4A, the Field Study, is a French-German initiative in support of the World Climate Research Programme's Grand Science Challenge on Clouds, Circulation and Climate Sensitivity. EUREC4A will take place between 20 January and 20 February 2020 with operations based out of Barbados. <http://eurec4a.eu/>



# Barbados Atmospheric Chemistry Observatory (BACO) Ragged Point, Barbados

Operated by the University of  
Miami, partnered with the Max  
Planck Institute for Chemistry



Dust measurements  
since 1965! 😲

# University of Miami Major Instrumentation

- Six high-volume filter aerosol samplers
- Two low-volume filter aerosol samplers
- Automated (wet-only) precipitation collectors
- High volume and low volume cascade impactors
- NASA AERONET robotic solar tracking photometer
- TEOM PM10 sampler
- NASA MPLNET Micropulse Lidar



# Advanced Global Atmospheric Gases Experiment (AGAGE)

- Measuring global atmospheric composition (trace gases) continuously since 1978
- Barbados AGAGE station commenced operations in July 1978 on the East coast of Barbados just below the Ragged Point lighthouse
- Supervised by the University of Bristol
- <https://agage.mit.edu/stations/ragged-point>





**University of Miami Atmospheric Chemistry Station  
and  
AGAGE  
Ragged Point, Barbados**



**AGAGE**

**U Miami**



# Moving forward

