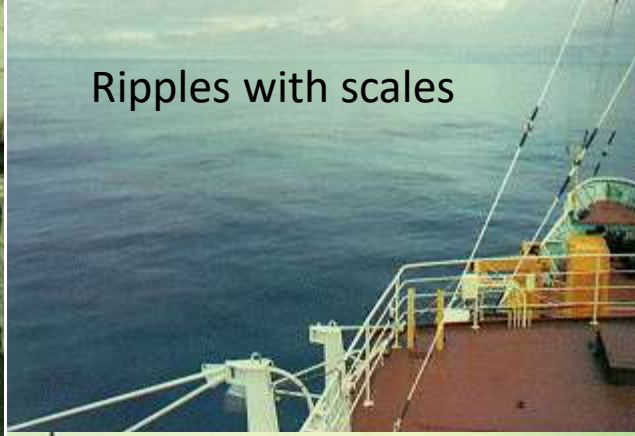


- Wind is the horizontal movement of air. The instrument used to measure wind speed is called an *anemometer*
- An **anemometer** is a device for measuring wind speed, and it is a common [weather station](#) instrument.

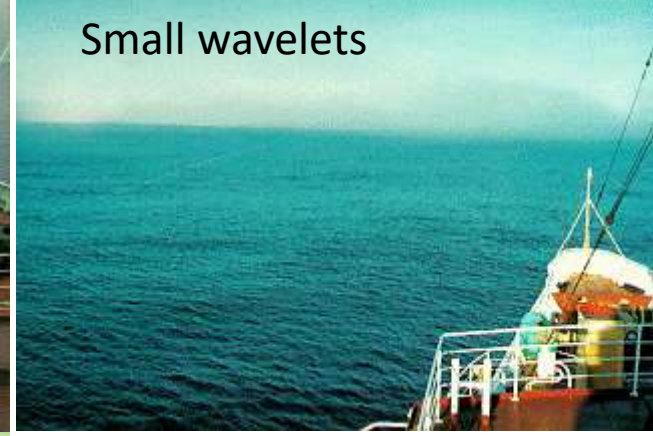
Wind Speed (KmPH)	Term	Description
0-5	Calm	Smoke goes straight up
6-20	Light	Wind is felt on face; weather vanes turn, leaves rustle
21-39	Moderate	Raises dust; flags flap
40-61	Strong	Large branches move; umbrellas turn inside out
62 or more	Gale / Whole Gale	



Sea like a mirror



Ripples with scales



Small wavelets



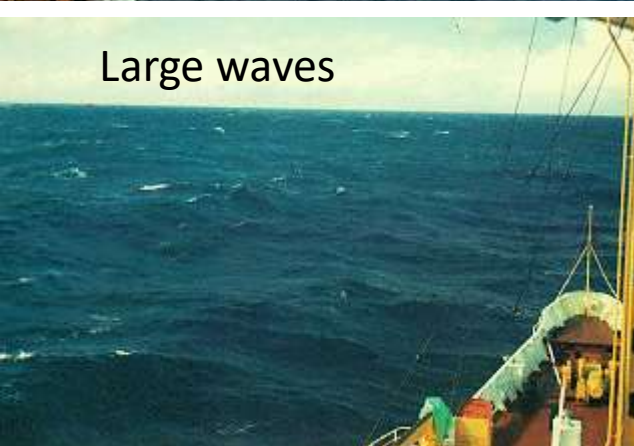
Large wavelets



Small waves



Moderate waves



Large waves

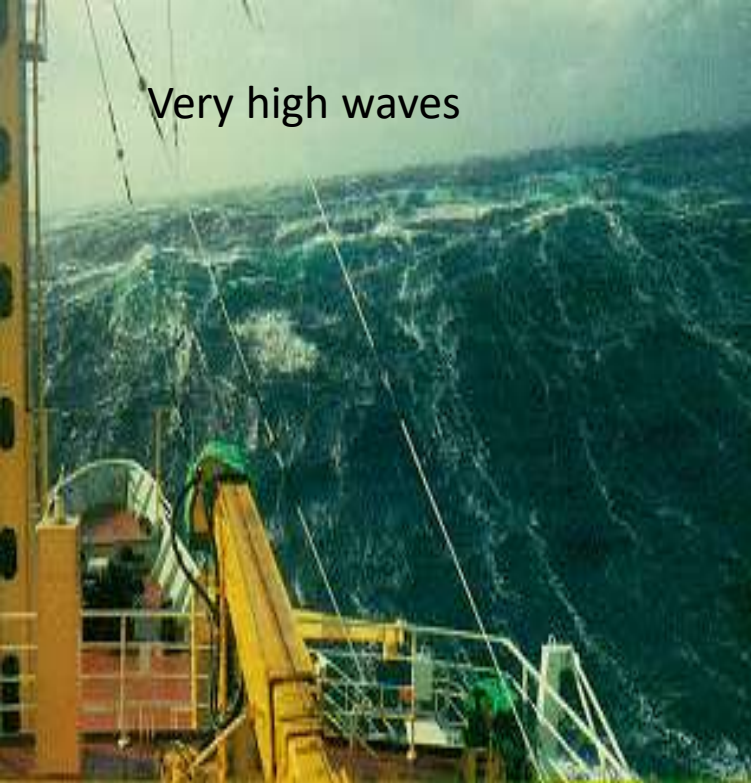


Sea heaps up

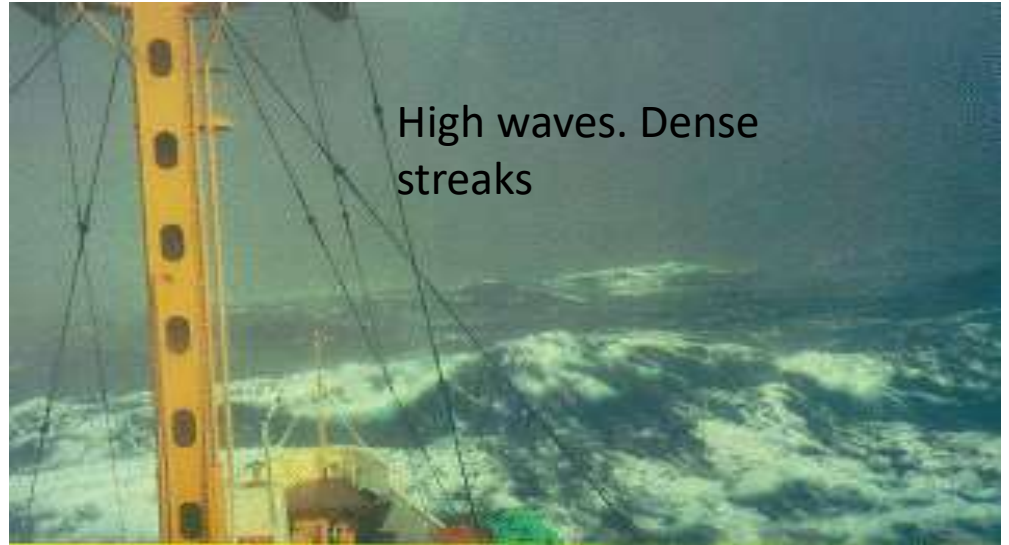


Moderately high waves of greater length

Very high waves



High waves. Dense streaks



The air is filled with foam and spray



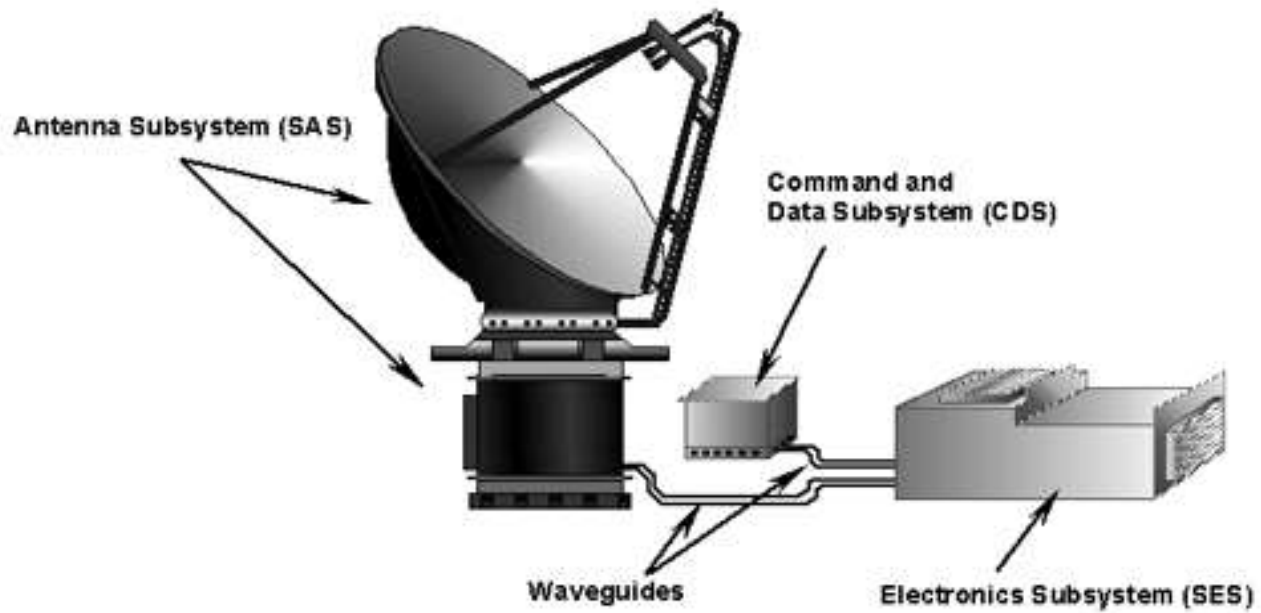
weather BUOY

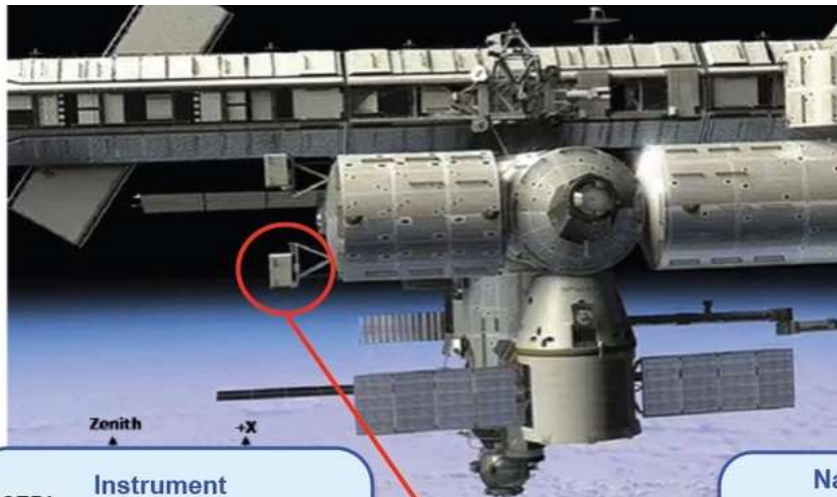
- These buoys gather a range of information about weather and sea conditions
 - Current and recent wind speed and direction
 - Wave height and period
 - Atmospheric pressure and trending
 - Air and water temperature



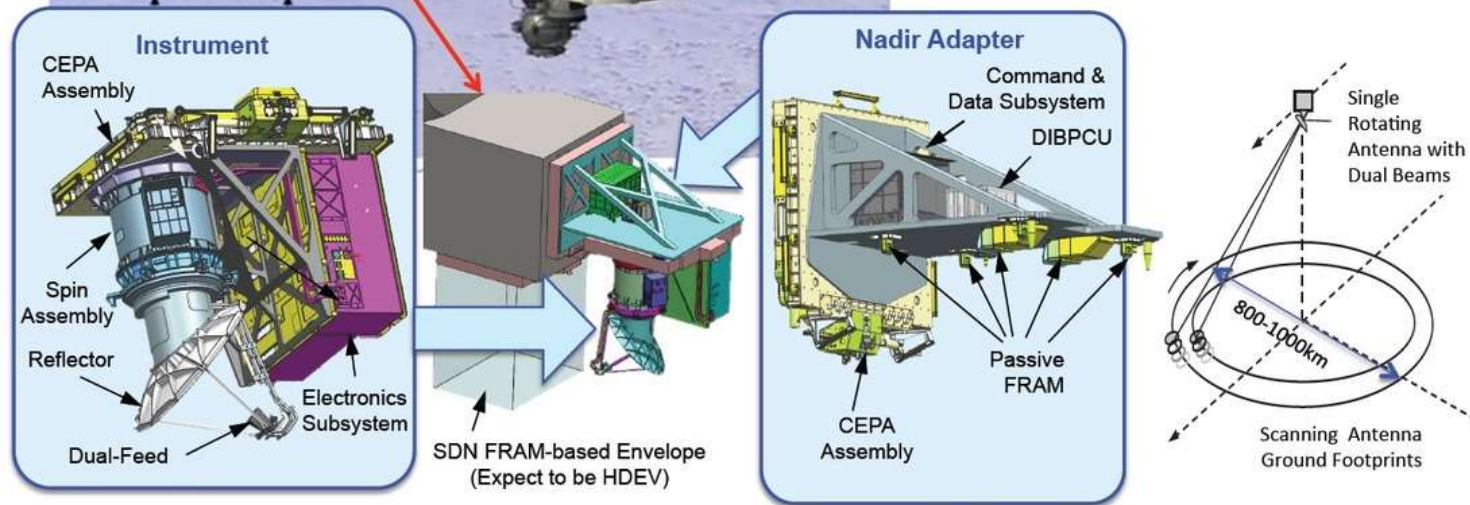
- A scatterometer is a microwave radar sensor used to measure the reflection or scattering effect produced while scanning the surface of the earth from an aircraft or a satellite.
- The SeaWinds scatterometer consists of three major parts called subsystems.
 - Electronics Subsystem (SES), -
 - Transmitter, receiver and digital signal processor. It generates and sends **high radio frequency** (RF) waves to the antenna. The antenna transmits the signal to the Earth's surface as energy pulses. When the pulses hit the surface of the ocean it causes a **scattering affect referred to as backscatter**.
 - Antenna Subsystem (SAS),
 - The SAS consists of a **one-meter parabolic reflector antenna mounted to a spin activator assembly**, which causes the reflector to rotate at 18 Rpm's (revolutions per minute).
 - Command and Data Subsystem (CDS)-
link between the **command center on the ground and the spacecraft and the scatterometer**. It controls the overall operation of the instrument, including the timing of each transmitted pulse and collects all the information necessary to transform the received echoes into wind measurements at a specific location on Earth

SeaWinds Scatterometer





The ISS Rapidscat instrument consists of legacy SeaWinds Engineering Model hardware plus new power and digital interface and new antenna (0.75 m diameter)



Applications

- Observing Oceans from Space
- Weather Forecasting
- Storm Detection
- Ship Routing
- Oil Production
- Food Production