

RADAR STANDS FOR RADIO DETECTION AND RANGING

RADAR IN SPACE

RADAR SYSTEMS WERE FIRST DEVELOPED FOR MILITARY APPLICATIONS.

THE FIRST DETECTION OF A RADAR SIGNAL REFLECTED BY THE MOON WAS ON 10 JANUARY 1946



RADIO SIGNALS ARE TRANSMITTED...

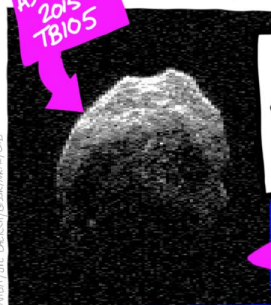
REFLECTED FROM A TARGET...

AND RECEIVED



THE RECEIVED SIGNAL, AND WHEN IT ARRIVES, CAN TELL US THE DISTANCE AND SPEED OF AN OBJECT, PLUS HOW ROUGH THE OBJECT IS.

ASTEROID 2015 TB105

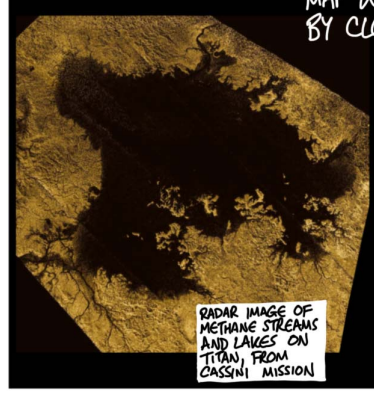


RADAR CAN BE USED FROM THE GROUND TO STUDY OBJECTS IN SPACE

RADAR "IMAGE" FROM THE GOLDSTONE RADIO ANTENNA, CALIFORNIA

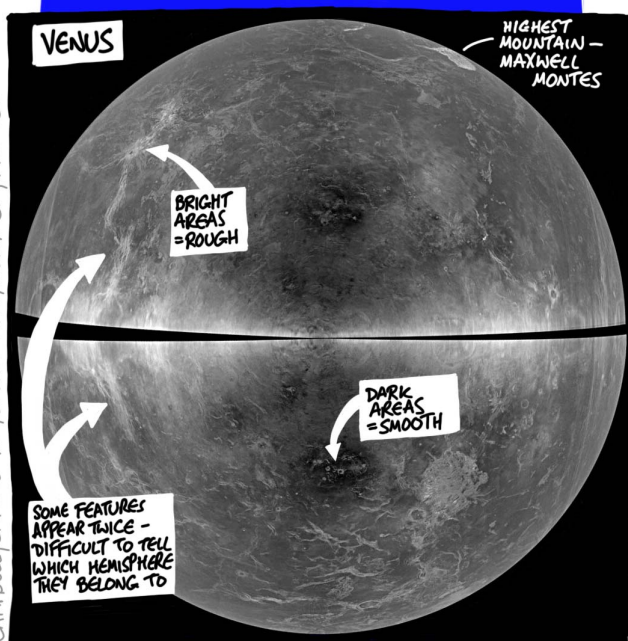
...OR CAN BE USED IN SPACE TO STUDY OBJECTS NEARBY.

ESPECIALLY USEFUL TO MAP WORLDS COVERED BY CLOUDS OR HAZE



RADAR IMAGE OF METHANE STREAMS AND LAKES ON TITAN, FROM CASSINI MISSION

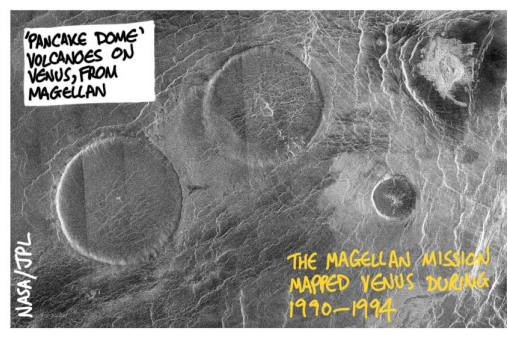
SATURN'S LARGEST MOON TITAN (DEFINITELY VERY HAZY)



CAMPBELL, SMITHSONIAN, ET AL. NRAO/AUI/NSF, ARECIBO



THE VENUS RADAR IMAGE ABOVE USED BISTATIC RADAR WHICH INVOLVES TWO ANTENNAS



'PANCAKE DOME' VOLCANOES ON VENUS, FROM MAGELLAN

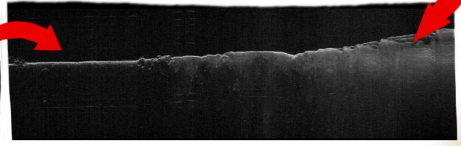
THE MAGELLAN MISSION MAPPED VENUS DURING 1979-1994

WHEN SPACECRAFT LIKE CASSINI ARE MOVING QUICKLY THROUGH SPACE, THEIR RADAR CAN ACT LIKE A SYSTEM USING A MUCH LARGER ANTENNA. THIS IS CALLED SYNTHETIC APERTURE RADAR

RADAR CAN ALSO PENETRATE SURFACES. THE MARSIS AND SHARAD HAVE MAPPED UNDER THE MARTIAN POLAR CAPS FROM ORBIT

THE ESA EXOMARS ROVER WILL CARRY A GROUND-PENETRATING RADAR CALLED WISDOM

SHARAD RADARGRAM SHOWING A CROSS-SECTION THROUGH A POLAR CAP ON MARS



OOOH Rocks!

