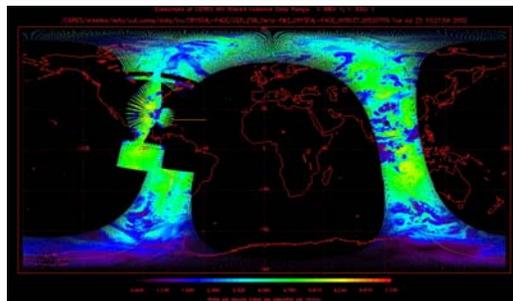
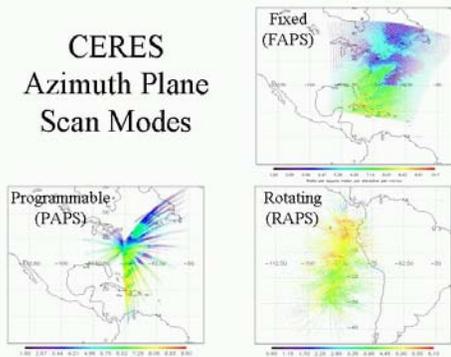


CERES PROGRAMMABLE AZIMUTH PLANE SCANS DURING CRYSTAL-FACE: Accurate TOA flux measurements

CERES Azimuth Plane Scan Modes



The Clouds and the Earth's Radiant Energy System (CERES) instrument is a narrow field-of-view scanning radiometer; its scan plane can be rotated in azimuth from -90 to +90 deg with respect to the satellite orbit plane. Cross-track scanning, perpendicular to the orbit plane, provides the largest possible spatial coverage; but each target is viewed once, at a single angle, per overpass. Along-track scanning, in the orbit plane, allows a target to be observed several times per orbit under a range of viewing angles; but the spatial coverage is limited to a narrow swath around the sub-satellite track. The rotating azimuth capability of the CERES instrument has been used primarily to sample the anisotropy of radiance field from all directions. This capability can be used to enhance our ability to inter-calibrate instruments on different spacecraft and to augment the spatial and angular coverage of targeted areas during intensive observation field campaigns.

During the CRYSTAL-FACE campaign, one of the CERES instruments on the Terra spacecraft operates in FAPS mode (Cross-Track, Fixed Azimuth) while the other one operates in PAPS mode (Programmable Azimuth). Attempts are also made to utilize the CERES instruments on the newly launched Aqua spacecraft. Operations are performed much the same as with the Terra spacecraft instruments. The PAPS instrument is positioned at the first azimuth position 5 minutes prior to the beginning of the PAPS sequence. The CERES azimuth position is then updated every other scan (~every 13 seconds) as the spacecraft transcends its orbit in the vicinity of the Miami CRYSTAL ground site. After the PAPS sequence, the PAPS instrument is returned to the regular Rotating Azimuth mode (RAPS).

Here is a table of the orbital start times for any over-flight passes. For Terra, FM2 commenced CRYSTAL-FACE operations on 3 July, 2002. The first Aqua PAPS mode is 10 July. Note: The CERES Terra instruments, FM1 and FM2, were launched on 19 December, 1999. These are designated as the "AM" instruments. The CERES AQUA instruments, FM3 and FM4, were launched on 4 May, 2002. These are designated as the "PM" instruments.

TERRA ORBITAL CROSSINGS		
DATE	1st PASS	2nd PASS
7/3/2002	15:21 UT	16:59 UT
7/4/2002	16:03 UT	--
7/5/2002	15:10 UT	16:46 UT
7/6/2002	15:51 UT	--
7/7/2002	16:34 UT	--
7/8/2002	15:39 UT	--
7/9/2002	16:21 UT	--
7/10/2002	15:27 UT	17:06 UT
7/11/2002	16:09 UT	--
7/12/2002	15:15 UT	16:53 UT
7/13/2002	15:57 UT	--
7/14/2002	15:04 UT	16:40 UT
7/15/2002	15:45 UT	--
7/16/2002	16:27 UT	--
7/17/2002	15:33 UT	--
7/18/2002	16:15 UT	--
7/19/2002	15:21 UT	16:59 UT
7/20/2002	16:03 UT	--
7/21/2002	15:10 UT	16:46 UT
7/22/2002	15:51 UT	--
7/23/2002	16:34 UT	--
7/24/2002	15:39 UT	--
7/25/2002	16:21 UT	--
7/26/2002	15:27 UT	17:06 UT
7/27/2002	16:09 UT	--
7/28/2002	15:15 UT	16:53 UT
7/29/2002	15:57 UT	--
7/30/2002	15:04 UT	16:40 UT
7/31/2002	15:45 UT	--

AQUA ORBITAL CROSSINGS		
DATE	1st PASS	2nd PASS
7/3/2002	--	--
7/4/2002	--	--
7/5/2002	--	--
7/6/2002	--	--
7/7/2002	--	--
7/8/2002	--	--
7/9/2002	--	--
7/10/2002	--	--
7/11/2002	--	--
7/12/2002	18:22 UT	--
7/13/2002	19:05 UT	--
7/14/2002	18:10 UT	--
7/15/2002	18:53 UT	--
7/16/2002	17:59 UT	19:38 UT
7/17/2002	18:41 UT	--
7/18/2002	17:47 UT	19:25 UT
7/19/2002	18:28 UT	--
7/20/2002	17:36 UT	19:12 UT
7/21/2002	18:16 UT	--
7/22/2002	18:59 UT	--
7/23/2002	18:05 UT	--
7/24/2002	18:47 UT	--
7/25/2002	17:53 UT	19:31 UT
7/26/2002	18:35 UT	--
7/27/2002	17:42 UT	19:18 UT
7/28/2002	18:22 UT	--
7/29/2002	19:05 UT	--
7/30/2002	--	--
7/31/2002	--	--

