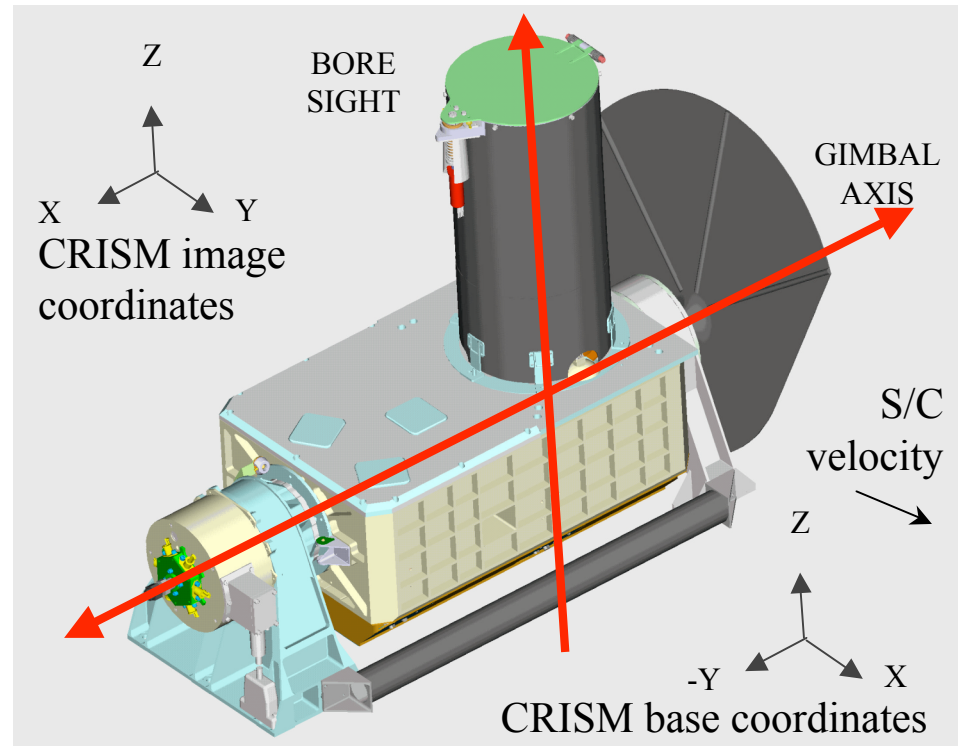


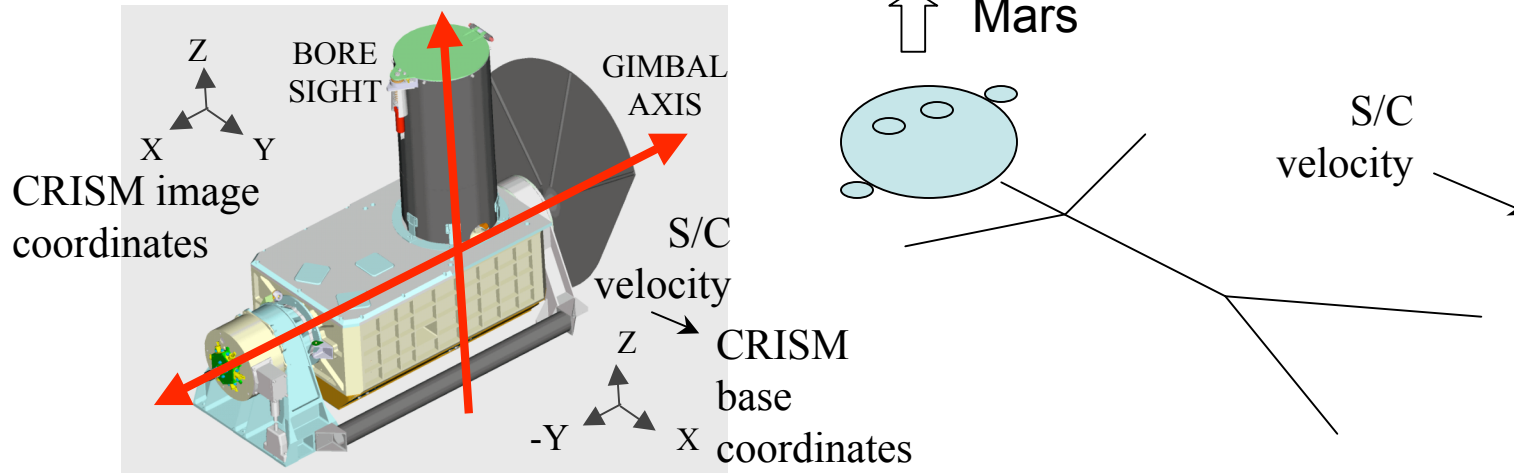


CRISM pointing sign conventions

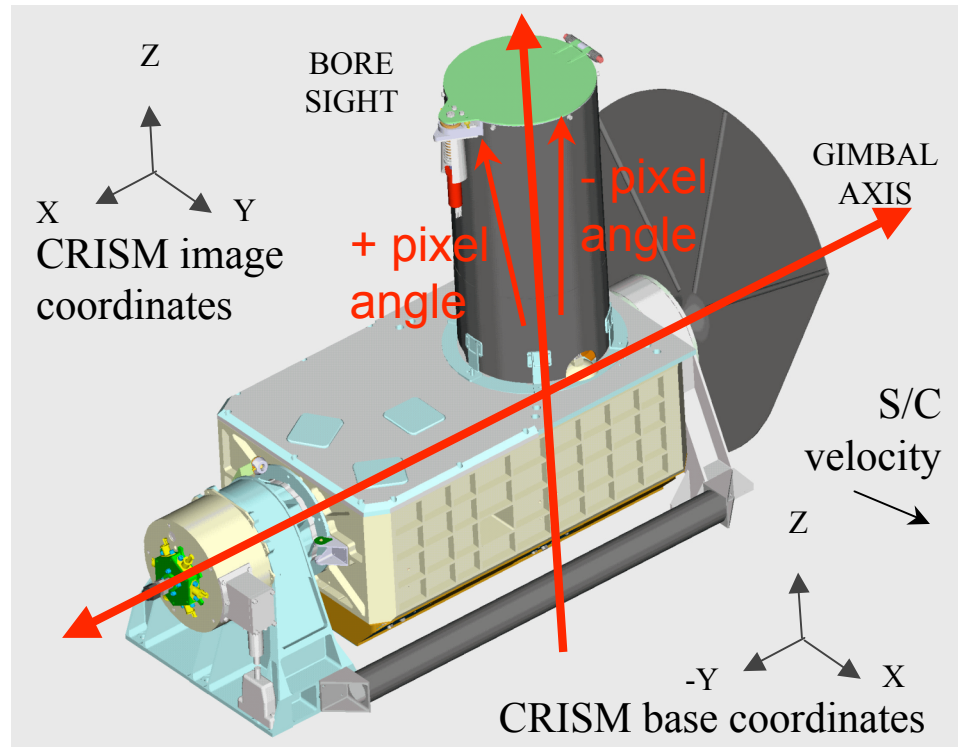
Dave Humm
19 May 2006



- Nominal CRISM base, spacecraft, and HiRise coordinate systems are the same
- Nominal base z is nadir, y is perpendicular to z and to spacecraft velocity, x is approximately in direction of spacecraft velocity
- The CRISM image coordinate system is described in a later slide

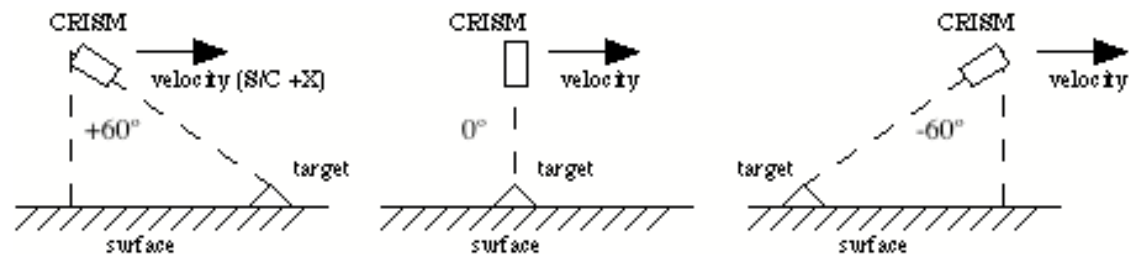
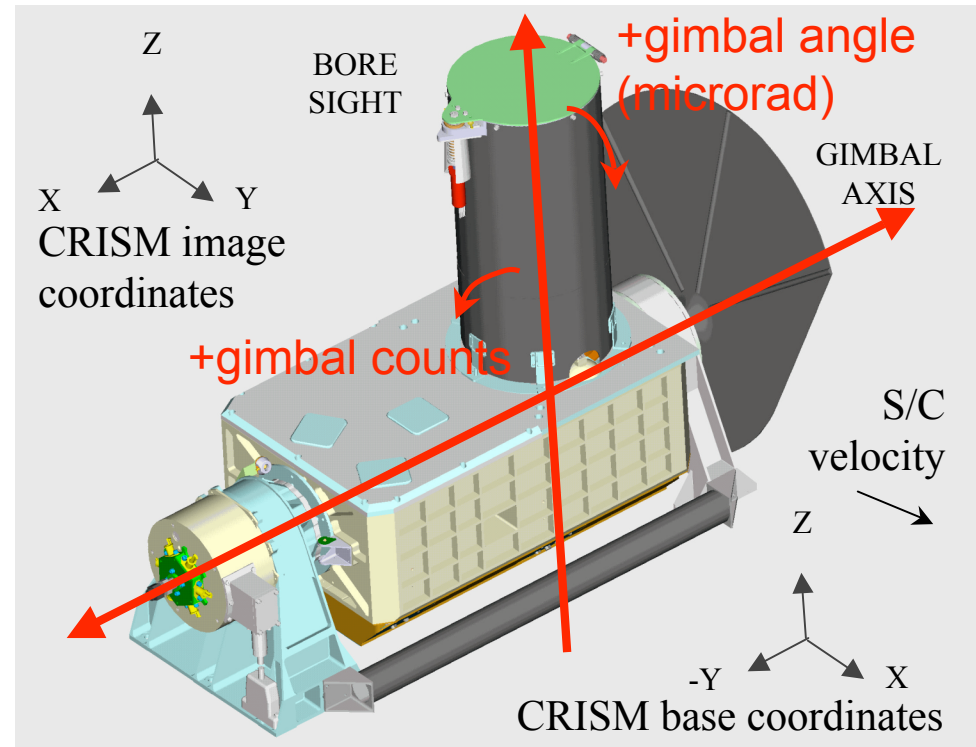


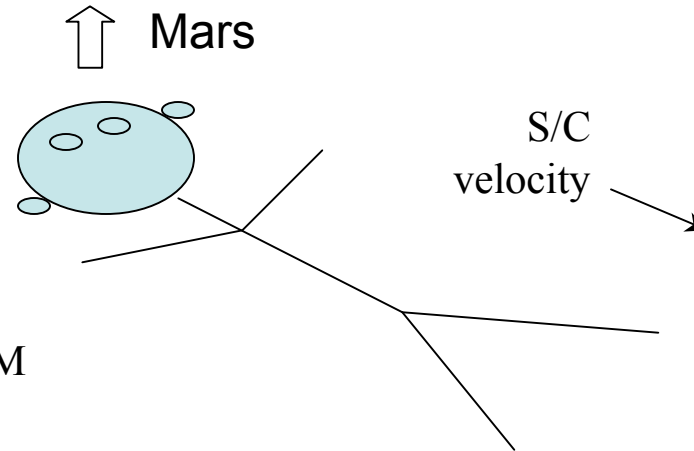
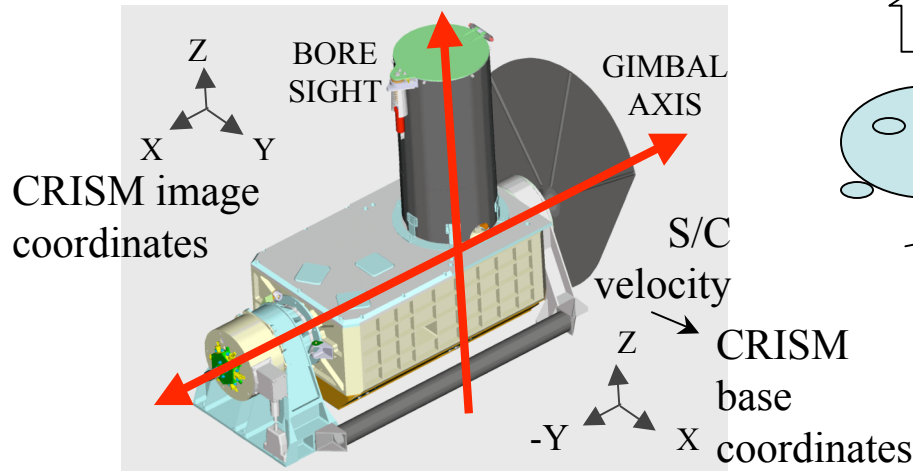
- Display column number 0 on left, 639 on right
- Display line number with line 0 as top line
 - Line number 0 corresponds to the first frame taken
 - REACT displays images this way, so they will be correct
 - I'm not sure of the convention for PNG images, but I think browse products are displayed with 0 the bottom line so they are mirror images [5/12/2006]
- Ground plane image is oriented as one would see
 - Flying on the spacecraft feet first
 - Looking out the CRISM telescope at Mars
 - Anti-sunward radiator is one's left ear



- Will be – for column 0 and + for column 639
- This is opposite the sign of the yaw angle from the calibration lab
- Zero degrees is defined as perpendicular to the gimbal axis

- Home and zero are the same
 - Nominally nadir
 - Used for mapping mode even though not exactly nadir
- Gimbal angle sign definitions
 - Commanded angle in microrad + looking forward along track, - looking back
 - Encoder counts + looking backward along track, - looking forward
 - Note: For CRISM theodolite alignments and for pre-env calibration, commanded angle in microrad + looking backward along track, - looking forward





- Designed so increasing x is increasing column number and increasing y is increasing line (frame) number in the ground plane image
- z axis is exactly along the boresight and approximately perpendicular to the gimbal axis. The x axis is in the plane of the boresight and the gimbal axis. The x axis is approximately along the gimbal axis and pointed away from the anti-sunward radiator
- When a target on Mars is imaged at a larger column number (larger pixel angle), the x -component of the unit vector pointing from CRISM to that target is larger
- When a target on Mars is imaged at a larger line number (that is, later), the y -component of the unit vector pointing from CRISM to that target is larger
- The image coordinate system rotates as the gimbal rotates, while the base coordinate system is fixed to the spacecraft bulkhead