Convert CSAT3 Ux and Uy wind vectors from the Right Handed Coordinate (RHC) system to wind direction in a Compass Coordinate (CC) system. The constant CSAT3_BEARING is the clockwise angle between North and the CSAT3's negative x-axis. In this table the CSAT3 is pointing due East, thus CSAT3_BEARING = 90. Theta is the angle between the x-axis and the wind vector.

THETA in RHC (deg)	Ux (m/s)	Uy (m/s)	horizontal wind speed (m/s)	P69 + CSAT3_BEARING (Ux,-1*Uy) (deg)	MOD(ATAN2(Ux,-1*Uy)+CSAT3_BEARING,360) 4 quad (deg)
0	1.0000	0.0000	1	90	90
15	0.9659	0.2588	1	75	75
30	0.8660	0.5000	1	60	60
45	0.7071	0.7071	1	45	45
60	0.5000	0.8660	1	30	30
75	0.2589	0.9659	1	15	15
90	0.0000	1.0000	1	0	0
105	-0.2588	0.9659	1	345	345
120	-0.5000	0.8660	1	330	330
135	-0.7071	0.7071	1	315	315
150	-0.8660	0.5000	1	300	300
165	-0.9659	0.2589	1	285	285
180	-1.0000	0.0000	1	270	270
-165	-0.9659	-0.2588	1	255	255
-150	-0.8660	-0.5000	1	240	240
-135	-0.7072	-0.7071	1	225	225
-120	-0.5000	-0.8660	1	210	210
-105	-0.2589	-0.9659	1	195	195
-90	0.0000	-1.0000	1	180	180
-75	0.2588	-0.9659	1	165	165
-60	0.5000	-0.8660	1	150	150
-45	0.7071	-0.7072	1	135	135
-30	0.8660	-0.5000	1	120	120
-15	0.9659	-0.2589	1	105	105

To convert wind direction from the CSAT3 Coordinate system (RHC) to Compass Coordinate (CC) system, use the 4 quadrant arctangent (ATAN2) and modulo divide (MOD) functions.

Generic Case

Wind_Dir = (arctan((-1*Uy)/Ux) + CSAT3_BEARING) MOD 360

Note: Use a four quadrant arctan() function. CSAT3_BEARING is always positive.

e swiatek, 24 Jan 05