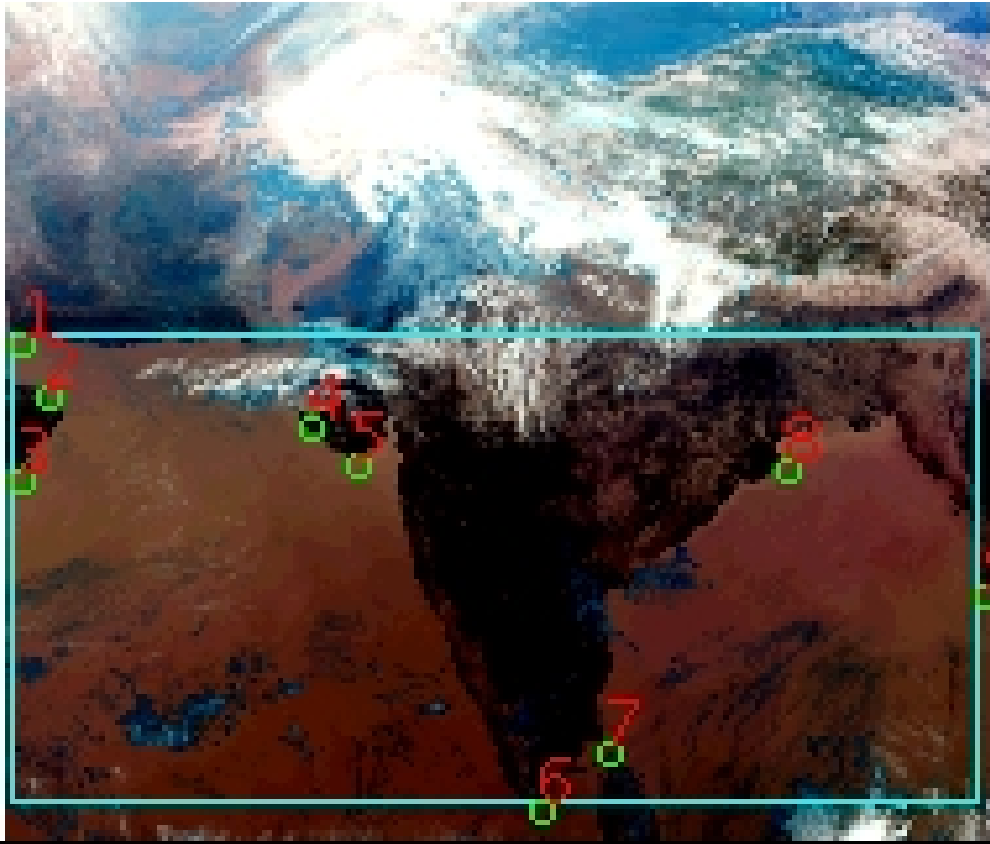


DQE Report: Location Accuracy of INSAT-3DR-SND STANDARD Product 3RSND_31JAN2019_0500

| | | | | | |
|---------------|----------------|-----------------|---------------|-----------------|----------|
| Satellite | INSAT-3DR | No Of Bands | 19 | Product Type | STANDARD |
| Sensor | SND | LvlOfProcess | L1B | Selected Band | 2-LWIR3 |
| DOP/Time | 31-01-19/05:00 | Station ID | BES | Field View(deg) | 6.136 |
| Res(Y,X) [Km] | (10.0,10.0) | Res(Y,X) [uRad] | (280.0,280.0) | | |

(41.199N,52.198W)

(41.199N,102.145E)



(6.808S,52.198W)

(6.808S,102.145E)

GCP Distribution overview for 3RSND31JAN20190500L1BSA1

Image Width: 384 Image Height: 320 No Of GCPs: 9

GCP Coverage(%) 55.94 (N-S) 95.77 (E-W)

Location Error(E)

Legend — 0Km < E <= 50Km — 50Km < E <= 100Km — E >100Km

Location Error (In IR Pixels)

| | Mean | Direction | Stddev | RMS |
|--------|--------|-----------|--------|-------|
| Along | 1.024 | N | 0.618 | 1.196 |
| Across | -1.416 | W | 0.800 | 1.626 |

Scale (Km)

| | Pixel Size | Stddev | %variation |
|---------|------------|--------|------------|
| Average | 10.671 | 0.449 | 6.714 |
| Along | 10.769 | 1.588 | 7.690 |
| Across | 10.612 | 0.493 | 6.115 |

Internal Distortion (in IR Pixels)

| | PeakToPeak | Mean | Stddev | RMS |
|--------|------------|--------|--------|-------|
| Along | 1.697 | 0.060 | 0.63 | 0.635 |
| Across | 1.630 | -1.000 | 0.58 | 1.158 |

Attitude Residuals (Deg)

| Pitch | Roll | Yaw |
|----------|----------|---------|
| -0.02024 | -0.01679 | 0.05518 |

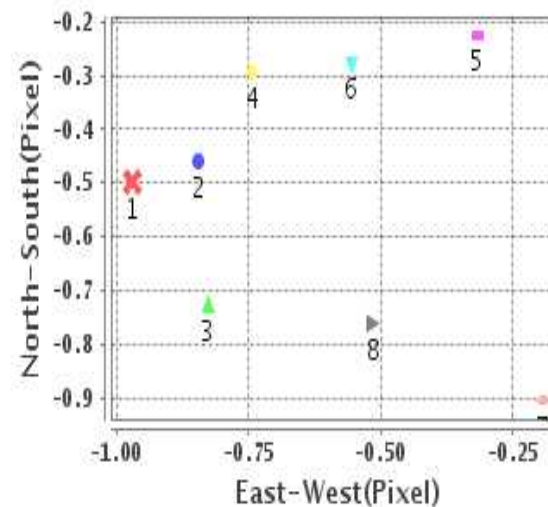
Reference Used

| Sensor | Resolution | Projection |
|--------|------------|------------|
| ETM | 500.00 | GGP |

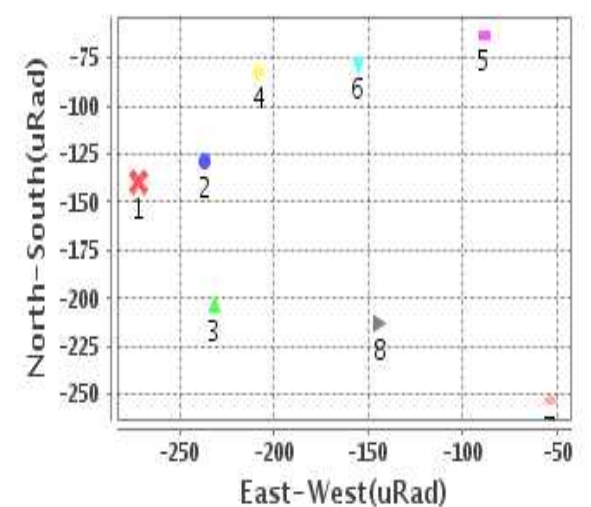
Radial Error (in IR Pixels)

| | |
|------|-------|
| Mean | 1.852 |
| Min | .288 |
| Max | 2.871 |
| CE90 | 2.761 |

Location Error For GCPs(Pixel)



Location Error For GCPs(uRad)



Detailed Product Information

Ancillary Info

| | | | |
|--------------------------|---------------|----------------------------------|------------|
| Satellite | INSAT-3DR | Generation Date | 31-01-19 |
| Sensor | SND | DQE Date | 01-02-2019 |
| PassType | NONE | Aquisition Date | 31-01-19 |
| Imaging Mode | FULL_FRAME | Aquisition Time(GMT) | 05:00 |
| Sat Altitude(m) | 3.6E7 | Nominal Altitude(Km) | 3.6E7 |
| Station | BES | Predicted Altitude(Km) | -999.99 |
| Sat Location(deg) | -999.99 E | Nominal Center Lat(deg) | 0.0 |
| Format | hdf5-1.8.8 | Nominal Center Lon(deg) | 74.0 |
| LvlOfProcessing | STANDARD | Predicted Center Lat(deg) | -999.99 |
| DP JobId | 3RSND_31JAN20 | Predicted Center Lon(deg) | -999.99 |
| ProductCode | NONE | | |
| Field View(deg) | 6.136 | | |

Projection Parameters

| | |
|--------------------------------------|----------|
| Projection | None |
| Ellipsoid | WGS_84 |
| Datum | WGS_84 |
| Zone | NotAvail |
| Semi_Major_Axis(Km) | 6378.14 |
| Semi_Minor_Axis(Km) | 6356.75 |
| Standard_Parallel1(deg) | -999.99 |
| Standard_Parallel2(deg) | -999.99 |
| Projection_Origin_Lon(deg) | -999.99 |
| Projection_Origin_Lat(deg) | -999.99 |
| Projection_False_Easting(Km) | -999.99 |
| Projection_False_Northing(Km) | -999.99 |

Scene Center Desc

| | |
|--------------------------|---------|
| Centre Lat(deg) | 24.004 |
| Center Lon(deg) | 77.171 |
| Centre Roll(deg) | -999.0 |
| Centre Pitch(deg) | -999.0 |
| Center Yaw(deg) | -999.0 |
| SunElevation(deg) | -999.99 |
| SunAzimuth(deg) | -999.99 |
| SatElevation(deg) | -999.99 |
| SatAzimuth(deg) | -999.99 |

Scene Corner Desc

| | |
|--------------------|---------|
| NW_Lat(deg) | 41.199 |
| NW_Lon(deg) | 52.198 |
| SW_Lat(deg) | 6.808 |
| SW_Lon(deg) | 52.198 |
| NE_Lat(deg) | 41.199 |
| NE_Lon(deg) | 102.145 |
| SE_Lat(deg) | 6.808 |
| SE_Lon(deg) | 102.145 |

Band Wise Details

| | Res_AL(Km) | Res_AX(Km) | Image Height | Image Width |
|--------------|------------|------------|--------------|-------------|
| LWIR1 | 10.0 | 10.0 | 320 | 384 |
| LWIR2 | 10.0 | 10.0 | 320 | 384 |
| LWIR3 | 10.0 | 10.0 | 320 | 384 |
| LWIR4 | 10.0 | 10.0 | 320 | 384 |
| LWIR5 | 10.0 | 10.0 | 320 | 384 |
| LWIR6 | 10.0 | 10.0 | 320 | 384 |

GDQE Computation Base

| | | | | | | | |
|-------------------|----------------|--------------------------------------|--------|-------------------------------|------------|----------------------------|-----------|
| Projection | MER | Wildpoint Rejection Threshold | 2.60 | SemiMajorAxis(m) | 6378137.00 | Mode Of Computation | grid |
| Ellipsoid | WGS_84 | | -sigma | SemiMinorAxis(m) | 6356752.31 | Used Reference Type | REFINSREF |
| Datum | WGS_84 | Unit | pixels | Standardparallel1(deg) | 17.0 | | |
| Zone | Not Applicable | | | Standardparallel2(deg) | 17.0 | | |

* -999.99 : Not Applicable/Not Available

References

JobId : 3RSND31JAN20190500L1BSA1

(-999.99 - Not Available/Not Computed)

| Ref.No | Source | File Name | Resolution (m) | Projection |
|--------|--------|-----------------|------------------|------------|
| 1 | ETM | world_Band1.img | 500.0 | GGP |

Location Accuracy

GCP Distribution Statistics

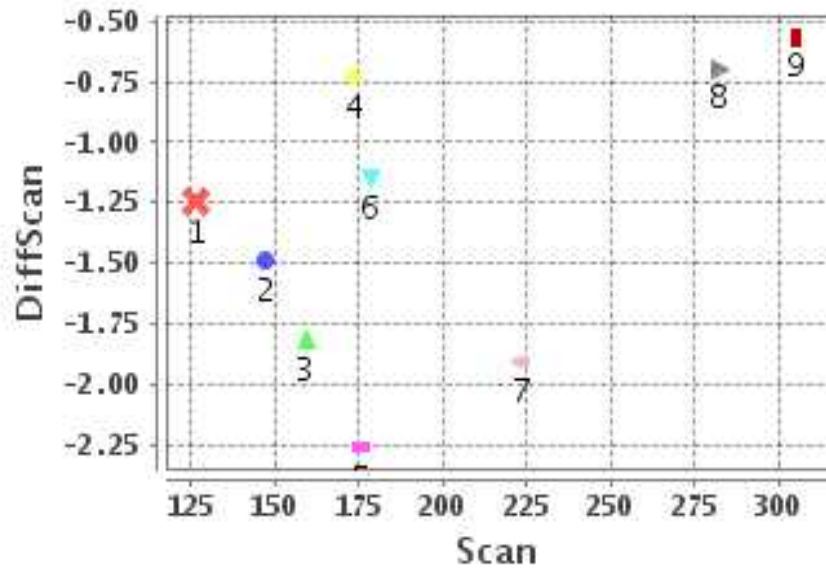
Image Width (pixels) : 384 Image Height (pixels) : 320 No of GCPs : 9

| | Mean | StdDev | Min | Max | Coverage(in %) |
|-----------------|-------|--------|-------|--------|----------------|
| GCP Scan | 196.8 | 57.7 | 126.5 | 305.50 | 55.94 (N-S) |
| GCP Pix | 159.0 | 125.5 | 11.2 | 379.00 | 95.77 (E-W) |

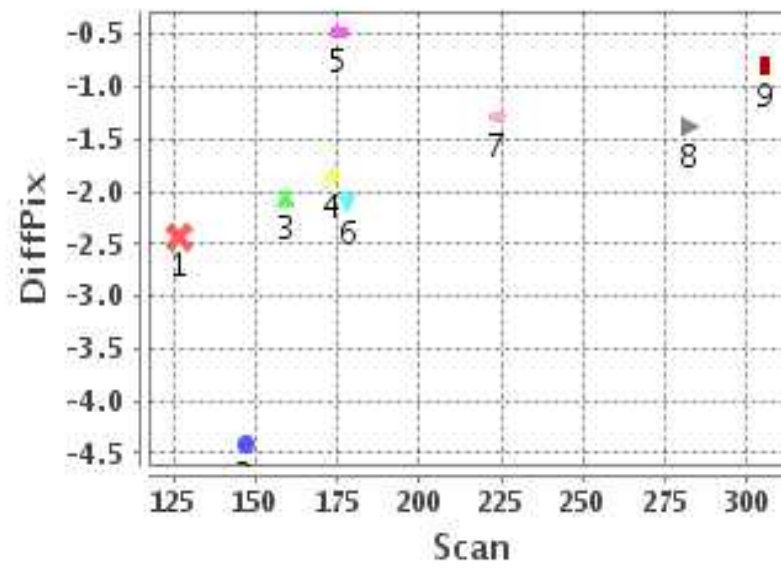
Identified Control Point details : (Differences are Reference - Product)

| No | Scan | Pix | DiffScan (line) | DiffPix (pixel) | DifLat (Km) | Dir | DifLon (Km) | Dir | Status |
|----|-------|-------|-----------------|-----------------|-------------|-----|-------------|-----|----------|
| 1 | 126.5 | 11.2 | -1.2 | -2.43 | 9.448 | N | 27.112 | W | Accepted |
| 2 | 147.0 | 21.8 | -1.5 | -4.41 | 18.462 | N | 44.627 | W | Rejected |
| 3 | 178.2 | 11.5 | -1.1 | -2.11 | 10.504 | N | 19.281 | W | Accepted |
| 4 | 159.2 | 120.2 | -1.8 | -2.07 | 17.884 | N | 21.037 | W | Accepted |
| 5 | 173.2 | 139.2 | -0.7 | -1.86 | 5.530 | N | 17.362 | W | Accepted |
| 6 | 305.5 | 209.5 | -0.6 | -0.79 | 0.619 | N | 2.812 | W | Accepted |
| 7 | 282.2 | 235.5 | -0.7 | -1.39 | 4.306 | N | 8.999 | W | Accepted |
| 8 | 175.5 | 303.0 | -2.3 | -0.48 | 19.003 | N | 4.002 | W | Accepted |
| 9 | 223.5 | 379.0 | -1.9 | -1.29 | 14.665 | N | 12.670 | W | Accepted |

Error(Pixels) Vs. GCPScan



Error(Pixels) Vs. GCPScan



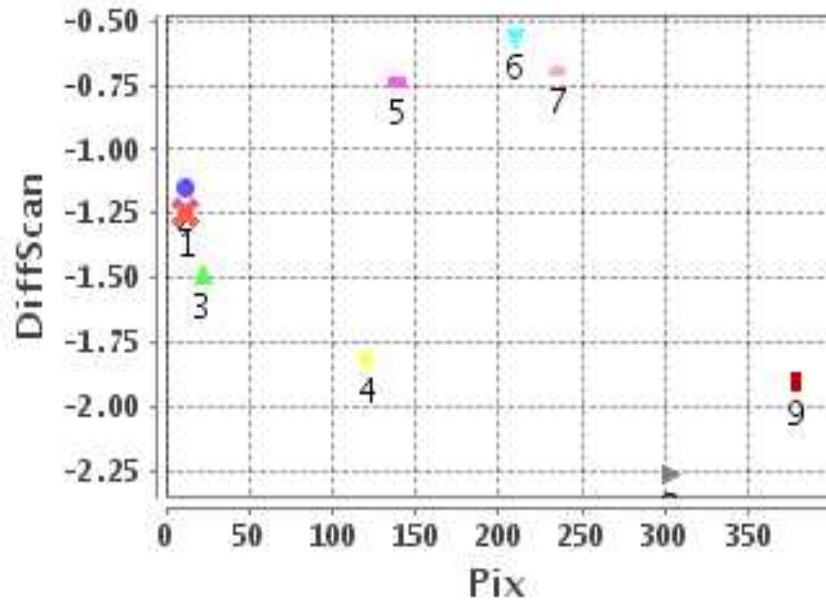
Number Of Points

| | |
|-------|---|
| North | 8 |
| South | 0 |
| East | 0 |
| West | 8 |

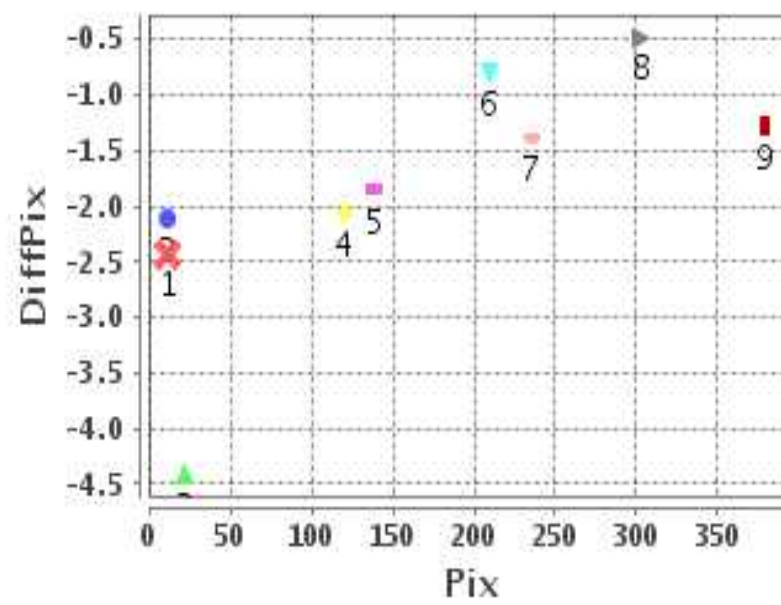
Radial Error (Km)

| | |
|------|-------|
| Mean | 1.852 |
| Min | .288 |
| Max | 2.871 |
| CE90 | 2.761 |

Error(Pixels) Vs. GCPPix



Error(Pixels) Vs. GCPPix



Location Accuracy

| | Mean | StdDev | RMS | Dir | * MinRMS | * MaxRMS |
|---------------|--------|--------|-------|-----|----------|----------|
| Along(Km) | 1.024 | 0.618 | 1.196 | N | 1.058 | 1.279 |
| Across (Km) | -1.416 | 0.800 | 1.626 | W | 1.405 | 1.735 |

Block-Wise Geo location Error Statistics

Location Accuracy,Scale,ID

| | | |
|--|---------|----------|
| Scan Range-0-105; Pix Range-0-127 | | |
| Number of GCPs | -999 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | -999.99 | NotAvail |
| Across(Mean,Dir) | -999.99 | NotAvail |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | -999.99 | -999.9 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -999.99 | -999.99 |
| Across(Mean,Stddev) | -999.99 | -999.99 |

| | | |
|--|---------|----------|
| Scan Range-0-105; Pix Range-127-255 | | |
| Number of GCPs | -999 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | -999.99 | NotAvail |
| Across(Mean,Dir) | -999.99 | NotAvail |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | -999.99 | -999.9 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -999.99 | -999.99 |
| Across(Mean,Stddev) | -999.99 | -999.99 |

| | | |
|--|---------|----------|
| Scan Range-0-105; Pix Range-255-384 | | |
| Number of GCPs | -999 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | -999.99 | NotAvail |
| Across(Mean,Dir) | -999.99 | NotAvail |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | -999.99 | -999.9 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -999.99 | -999.99 |
| Across(Mean,Stddev) | -999.99 | -999.99 |

| | | |
|--|-------------|-------|
| Scan Range-105-212; Pix Range-0-127 | | |
| Number of GCPs | 3 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 12.61329999 | N |
| Across(Mean,Dir) | -22.48 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | 11.36 | 13.57 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | 0.24 | 0.33 |
| Across(Mean,Stddev) | -0.34 | 0.02 |

| | | |
|--|---------|---------|
| Scan Range-105-212; Pix Range-127-255 | | |
| Number of GCPs | 1 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 5.53 | N |
| Across(Mean,Dir) | -17.36 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | -999.99 | -999.9 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -999.99 | -999.99 |
| Across(Mean,Stddev) | -999.99 | -999.99 |

| | | |
|--|---------|---------|
| Scan Range-105-212; Pix Range-255-384 | | |
| Number of GCPs | 1 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 19.0 | N |
| Across(Mean,Dir) | -4.00 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | -999.99 | -999.9 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -999.99 | -999.99 |
| Across(Mean,Stddev) | -999.99 | -999.99 |

| | | |
|--|---------|----------|
| Scan Range-212-320; Pix Range-0-127 | | |
| Number of GCPs | -999 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | -999.99 | NotAvail |
| Across(Mean,Dir) | -999.99 | NotAvail |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | -999.99 | -999.9 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -999.99 | -999.99 |
| Across(Mean,Stddev) | -999.99 | -999.99 |

| | | |
|--|-------|------|
| Scan Range-212-320; Pix Range-105-255 | | |
| Number of GCPs | 2 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 2.459 | N |
| Across(Mean,Dir) | -5.91 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | 9.79 | 2.12 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -0.13 | 0.00 |
| Across(Mean,Stddev) | 0.60 | 0.00 |

| | | |
|--|---------|---------|
| Scan Range-212-320; Pix Range-255-384 | | |
| Number of GCPs | 1 | |
| Location Error(Km) | | |
| Along(Mean,Dir) | 14.67 | N |
| Across(Mean,Dir) | -12.67 | W |
| Scale(Km) | | |
| Average Scale (Mean,%Variation) | -999.99 | -999.9 |
| Internal Distortion(Pixel) | | |
| Along(Mean,Stddev) | -999.99 | -999.99 |
| Across(Mean,Stddev) | -999.99 | -999.99 |

*-999 : no gcp available

* -999.99 : values are not computed