

Kalpana-1 AMV: February 2016

AMVs vs Radiosonde (0000 & 1200 UTC)

| Northern hemisphere | No of Collocation | MVD | RMSVD | SD | Mean Speed Dif (ABS) | Mean Dir Dif (ABS) | Bias | Mean Speed AMV | Mean Speed RS |
|---------------------|-------------------|-----|-------|-----|----------------------|--------------------|------|----------------|---------------|
| Low level CMV | 628 | 5.0 | 5.5 | 2.2 | 3.2 | 25.1 | -0.1 | 8.1 | 8.1 |
| Mid level CMV | 881 | 5.7 | 6.4 | 2.6 | 3.8 | 14.6 | -1.2 | 15.4 | 16.6 |
| High level CMV | 1310 | 7.4 | 8.3 | 3.6 | 4.8 | 12.6 | -1.1 | 24.0 | 25.0 |
| High level WWV | 2949 | 7.9 | 7.9 | 4.7 | 5.3 | 12.6 | 1.2 | 26.4 | 25.2 |

| Tropics | No of Collocation | MVD | RMSVD | SD | Mean Speed Dif (ABS) | Mean Dir Dif (ABS) | Bias | Mean Speed AMV | Mean Speed RS |
|----------------|-------------------|-----|-------|-----|----------------------|--------------------|------|----------------|---------------|
| Low level CMV | 332 | 4.5 | 4.8 | 1.6 | 3.1 | 24.1 | 1.5 | 8.0 | 6.5 |
| Mid level CMV | 234 | 4.3 | 4.4 | 1.0 | 2.5 | 24.2 | 0.1 | 8.1 | 8.0 |
| High level CMV | 2730 | 5.4 | 6.1 | 2.8 | 3.4 | 21.2 | 0.6 | 10.7 | 10.1 |
| High level WWV | 4400 | 6.0 | 6.8 | 3.1 | 4.0 | 20.7 | 2.0 | 12.5 | 10.5 |

| Southern hemisphere | No of Collocation | MVD | RMSVD | SD | Mean Speed Dif (ABS) | Mean Dir Dif (ABS) | Bias | Mean Speed AMV | Mean Speed RS |
|---------------------|-------------------|-----|-------|-----|----------------------|--------------------|------|----------------|---------------|
| Low level CMV | 13 | 5.2 | 5.4 | 1.4 | 2.8 | 23.5 | 1.3 | 10.2 | 8.9 |
| Mid level CMV | 5 | 5.2 | 5.2 | 0.2 | 4.3 | 23.6 | 2.1 | 9.4 | 7.3 |
| High level CMV | 72 | 6.1 | 6.5 | 1.7 | 3.8 | 13.6 | -1.6 | 19.0 | 20.7 |
| High level WWV | 73 | 5.9 | 6.1 | 1.2 | 4.4 | 10.5 | -0.1 | 20.8 | 20.9 |

| Global | No of Collocation | MVD | RMSVD | SD | Mean Speed Dif (ABS) | Mean Dir Dif (ABS) | Bias | Mean Speed AMV | Mean Speed RS |
|----------------|-------------------|-----|-------|-----|----------------------|--------------------|------|----------------|---------------|
| Low level CMV | 973 | 5.0 | 5.5 | 2.4 | 3.4 | 24.7 | 0.6 | 8.2 | 7.6 |
| Mid level CMV | 1120 | 5.4 | 6.1 | 2.7 | 3.6 | 16.3 | -0.9 | 14.0 | 14.9 |
| High level CMV | 4112 | 6.0 | 6.9 | 3.3 | 3.8 | 17.8 | 0.2 | 15.2 | 15.0 |
| High level WWV | 7422 | 6.7 | 7.9 | 4.1 | 4.5 | 17.4 | 1.7 | 17.8 | 16.1 |

MVD: Mean vector difference

RMSVD: Root mean square vector difference

SD: Standard Deviation

Mean Speed Dif (ABS): Absolute mean wind speed difference

Mean Dir Dif (ABS): Absolute mean wind direction difference

High level: 100-400hPa

Mid level: 401-700hPa

Low level: 701-975hPa

MVD, RMSVD, SD, Mean Speed Dif, Mean Speed AMV, Mean Speed RS are in ms^{-1} , Mean Dir Dif is in degree.

Collocation Criteria:

- **All AMVs within 150km of each radiosonde location and pressure difference $\pm 20\text{hPa}$ are considered for validation.**
- **Collocation pairs with speed difference greater than 30ms^{-1} and direction difference greater than 60° are screened out.**
- **Quality indicator is not used for the current validation.**