

Kalpana-1 AMV: February 2017

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 | 698 | 4.9 | 5.4 | 2.2 | 3.4 | 23.2 | -0.3 | 7.8 | 8.2 |
| Mid level CMV | 696 | 6.0 | 6.6 | 2.4 | 3.8 | 16.9 | -1.4 | 16.1 | 17.5 |
| High level CMV | 694 | 8.4 | 9.3 | 3.7 | 5.6 | 2.6 | 0.4 | 9.7 | 0.0 |
| High level WVVV | 1892 | 8.2 | 8.2 | 4.9 | 5.5 | 12.3 | 2.0 | 30.7 | 28.7 |

| 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 | 233 | 4.2 | 4.4 | 1.2 | 2.7 | 26.8 | 0.8 | 6.8 | 6.0 |
| Mid level CMV | 102 | 5.0 | 5.1 | 0.8 | 3.3 | 25.6 | 0.1 | 8.2 | 8.1 |
| High level CMV | 3673 | 5.9 | 6.8 | 3.3 | 3.9 | 0.6 | 0.1 | 1.4 | 1.3 |
| High level WVVV | 4926 | 6.7 | 7.7 | 3.7 | 4.8 | 19.5 | 2.4 | 13.9 | 11.5 |

| 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 | 30 | 4.9 | 5.0 | 0.8 | 3.1 | 19.7 | -0.9 | 11.5 | 12.4 |
| Mid level CMV | 10 | 5.9 | 6.0 | 0.9 | 3.7 | 7.5 | -3.7 | 29.1 | 32.8 |
| High level CMV | 48 | 7.0 | 7.2 | 1.3 | 4.8 | 2.6 | 0.4 | 6.4 | 6.8 |
| High level WVVV | 79 | 7.5 | 7.7 | 1.2 | 5.2 | 19.9 | 2.7 | 17.0 | 14.3 |

| 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 | 961 | 4.8 | 5.3 | 2.2 | 3.3 | 23.1 | -0.3 | 7.8 | 8.1 |
| Mid level CMV | 808 | 6.0 | 6.5 | 2.3 | 3.8 | 18.4 | -1.1 | 15.3 | 16.3 |
| High level CMV | 4415 | 6.3 | 7.3 | 3.7 | 4.2 | 9.4 | 0.1 | 4.3 | 4.2 |
| High level WVVV | 6897 | 7.0 | 8.2 | 4.3 | 4.9 | 17.3 | 2.3 | 18.1 | 15.9 |

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.