WELCOME ADDRESS

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Good morning Ladies and Gentlemen,

I am pleased to welcome you to the Fifth International Winds Workshop, held under the auspices of the meteorological satellite agencies and in close co-operation with the WMO Co-ordination Group for Meteorological Satellites. These workshops involve co-operation among agencies across Europe, the Americas and Asia.

We are meeting in the tourist town of Lorne, a few hours drive from Melbourne. Continuing along the coast from Lorne, one soon comes to spectacular scenery where the coast is swept by winds off the Southern Ocean. These prevailing winds meant that last century these waters were treacherous for shipping, and dozens of ships were lost along the coast.

The oceans surrounding Australia highlight the major difference between the northern and southern hemispheres. These vast oceans without conventional meteorological observations mean that satellite data are vital to us in Australia. The introduction of routine satellite imagery had a profound effect on forecasting in Australia nearly forty years ago. In particular, cloud-drift winds provide a significant source of data for our numerical weather prediction (NWP) systems. It is therefore pleasing to see the increasing availability of these data, with increasing spatial and temporal frequency.

While satellite data are critical for NWP and weather prediction in general, it is important to be aware that the record of global climate is also dependent upon satellites. This need is especially significant as we look to the future of the integrated global observing system. To some, this process has an aim of using satellites to compensate for reductions in the number of *in situ* data. In reality, what we are doing is seeking to optimise our overall observation resources to cover the full range of user needs. Key needs of the climate community are for observations that have long-term consistency and high quality. One of the aims of climate studies is the identification of trends and changes in variables, such as temperature and rainfall. Thus we are looking for a small signal against a noisy background.

For the *in situ* observations, we have established networks, subsets of the World Weather Watch, that will provide baseline observations for climate analysis. These networks, the GCOS Surface Network (GSN) and the GCOS Upper Air Network (GUAN), will also provide benchmarks or calibration standards for NWP systems. It is very encouraging to see the satellite community recognising the importance of these observations for both weather and climate applications. It is vital that we get similarly consistent and high-quality satellite observations to complement the *in situ* data.

The importance of satellite-derived winds has been recognised for a long time. Over a decade ago, the Joint Scientific Committee of the World Climate Research Programme (WCRP) was asked for its priorities for satellite observations by the space agencies. Even at that time, the highest priority for new data types was for the capability to estimate winds right across the tropics.

As we look into the future, it seems that this priority of lidar-based winds is likely to be satisfied in the next few years. This will provide a fine complement to the cloud-based winds that you are focusing on now.

If we continue to look into the future (i.e. to look at other trends), I expect that the processing of satellite imagery will evolve from the calculation of individual winds to the assimilation of radiances. Our capability to model clouds is evolving rapidly, and so our capability to utilise satellite imagery will also increase.

With these two developments (lidar-based winds and direct assimilation of imagery), it is clear that these international workshops will continue to be major forums for the consideration of major issues. In addition to the exciting science, the workshops are vital in resolving key operational issues, such as the most efficient manner to exchange the data in real time. Indeed this is a great feature of the WMO system: it brings together research and operational communities in a harmonious way.

In opening this fifth workshop, I wish you well in your deliberations over the next few days. I also trust that you will stay long enough to take that drive along the south coast I mentioned at the start. It would clearly be a business trip, allowing you to understand why the analysis of satellite winds is such a key problem for us in the southern hemisphere.