

MOTIONS IN JUPITER'S ATMOSPHERE

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Abstract. Recent contributions to the dynamics of Jupiter's atmospheres were reviewed under the following headings: (a) general magnitude of winds and temperature fluctuations; (b) cloud bands and zonal velocity profile (including equatorial jet); (c) transient non-axisymmetric features (spots, and irregular markings); (d) the Great Red Spot.

Some Useful References

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DISCUSSION

Heard: Are the bands regarded as holes in an upper cloud layer through which we see a lower cloud layer?

Hide: The bands comprise belts and zones. It is generally considered that the zones, which are bright, are regions of rising motion where ammonia cirrus clouds form and that the belts, which are dark, are regions of descending motion, where ammonia cirrus does not form.

Low: Our recent *Astrophys. J.* paper shows a strong correlation between temperature measurements at 5μ and 'cloud' colour. The blue clouds are hot (T about 250–300 K); the red, brown clouds are cold (T about 200 K) and, therefore, presumably higher.

Gehrels: It seems urgent, and interesting, to use photographs of Jupiter to measure cloud motions.

Baum: Profiles of rotation period as a function of latitude are being measured and analysed by Jay

Inge in my group at Lowell Observatory, particularly seeking short term variations. A paper by Inge concerning sampled time intervals in 1970, 1971, and 1972 will soon appear in *Icarus*. In the hope of detecting more detail (perhaps non-laminar) in the atmospheric flow pattern, I am attempting by image rectification to construct pseudo-time-lapse sequences as they would be seen from a synchronous satellite in an equatorial orbit around the planet; but that is a rather difficult task, it will take time to do, and it may not succeed. Our purpose, however, is to make sure that we detect all of the image information inherently available in the patrol photographs.