Jupiter Fact Sheet

Jupiter/Earth Comparison

Bulk parameters

	Jupiter	Earth	Ratio (Jupiter/Earth)
Mass (10^{24} kg)	1,898.6	5.9736	317.83
Volume (10^{10} km^3)	143,128	108.321	1321.33
Radius (1 bar level) (km)			
Equatorial	71,492	6,378.1	11.209
Polar	66,854	6,356.8	10.517
Volumetric mean radius (km)	69,911	6,371.0	10.973
Ellipticity	0.06487	0.00335	19.36
Mean density (kg/m^3)	1,326	5,515	0.240
Gravity (eq., 1 bar) (m/s^2)	23.12	9.78	2.364
Escape velocity (km/s)	59.5	11.19	5.32
GM (x 10^6 km^3/s^2)	126.686	0.3986	317.8
Bond albedo	0.343	0.306	1.12
Visual geometric albedo	0.52	0.367	1.42
Visual magnitude V(1,0)	-9.40	-3.86	-
Solar irradiance (W/m^2)	50.50	1367.6	0.037
Black-body temperature (K)	110.0	254.3	0.433
Moment of inertia (I/MR^2)	0.254	0.3308	0.768
J_2 (x 10^{-6})	14,736	1082.63	13.611

Orbital parameters

	Jupiter	Earth	Ratio (Jupiter/Earth)
Semimajor axis (10^6 km)	778.57	149.60	5.204
Sidereal orbit period (days)	4,332.589	365.256	11.862

Tropical orbit period (days)	4,330.595	365.242	11.857
Perihelion (10^6 km)	740.52	147.09	5.034
Aphelion (10^6 km)	816.62	152.10	5.369
Synodic period (days)	398.88	-	-
Mean orbital velocity (km/s)	13.07	29.78	0.439
Max. orbital velocity (km/s)	13.72	30.29	0.453
Min. orbital velocity (km/s)	12.44	29.29	0.425
Orbit inclination (deg)	1.304	0.000	-
Orbit eccentricity	0.0489	0.0167	2.928
Sidereal rotation period (hours)	9.9250*	23.9345	0.415
Length of day (hrs)	9.9259	24.0000	0.414
Obliquity to orbit (deg)	3.13	23.45	0.133

* System III (1965.0) coordinates

Jupiter Observational Parameters

Discoverer: Unknown
Discovery Date: Prehistoric

Distance from Earth		
Minimum (10^6 km)	588.5	
Maximum (10^6 km)	968.1	
Apparent diameter from Earth		
Maximum (seconds of arc)	59.0	
Minimum (seconds of arc)	29.8	
Mean values at opposition from Earth		
Distance from Earth (10^6 km)		628.76
Apparent diameter (seconds of arc)		46.9
Apparent visual magnitude		-2.7

Jupiter Mean Orbital Elements (J2000)

Semimajor axis (AU)	5.20336301
Orbital eccentricity	0.04839266
Orbital inclination (deg)	1.30530
Longitude of ascending node (deg)	100.55615
Longitude of perihelion (deg)	14.75385
Mean Longitude (deg)	34.40438

Jovian Magnetosphere

Goddard Space Flight Center O4 Model

```
Dipole field strength: 4.28 gauss-Rj^3
Dipole tilt to rotational axis: 9.6 degrees
Longitude of tilt: 201.7 degrees
Dipole offset (planet center to dipole center) distance: 0.131 Rj
Latitude/Longitude of offset vector: -8.0 degrees/148.57 degrees
```

Note: All latitudes/longitudes are given in Jovian System III (1965.0) coordinates.
Rj denotes Jovian radii, 71,398 km

Jovian Atmosphere

```
Surface Pressure: >>100 bars
Average temperature: ~129 K
Temperature at 1 bar: ~165 K
Density at 1 bar: ~0.16 kg/m^3
Wind speeds
   Up to ~150 m/s (<30 degrees latitude)
   Up to  ~40 m/s (>30 degrees latitude)
Scale height: 27 km
Mean molecular weight: 2.22 g/mole
Atmospheric composition (uncertainty in parentheses)
    Major:       Molecular hydrogen (H2) - 89.8% (2.0%); Helium (He) - 10.2% (2.0%)
    Minor (ppm): Methane (CH4) - 3000 (1000); Ammonia (NH3) - 260 (40);
                 Hydrogen Deuteride (HD) - 28 (10); Ethane (C2H6) - 5.8 (1.5);
                 Water (H2O) - ~4 (varies with pressure)
    Aerosols:    Ammonia ice, water ice, ammonia hydrosulfide
```

Questions and comments about this page should be addressed to:
Dr. David R. Williams, dwilliam@nssdc.gsfc.nasa.gov, +1-301-286-1258
NSSDC, Mail Code 633, NASA/Goddard Space Flight Center, Greenbelt, MD 20771
or
Dr. Edwin V. Bell II, ed.bell@gsfc.nasa.gov, +1-301-286-1187
NSSDC, Mail Code 633, NASA/Goddard Space Flight Center, Greenbelt, MD 20771

NASA Official: J. H. King, joseph.h.king@gsfc.nasa.gov
Last Updated: 14 July 2000, DRW