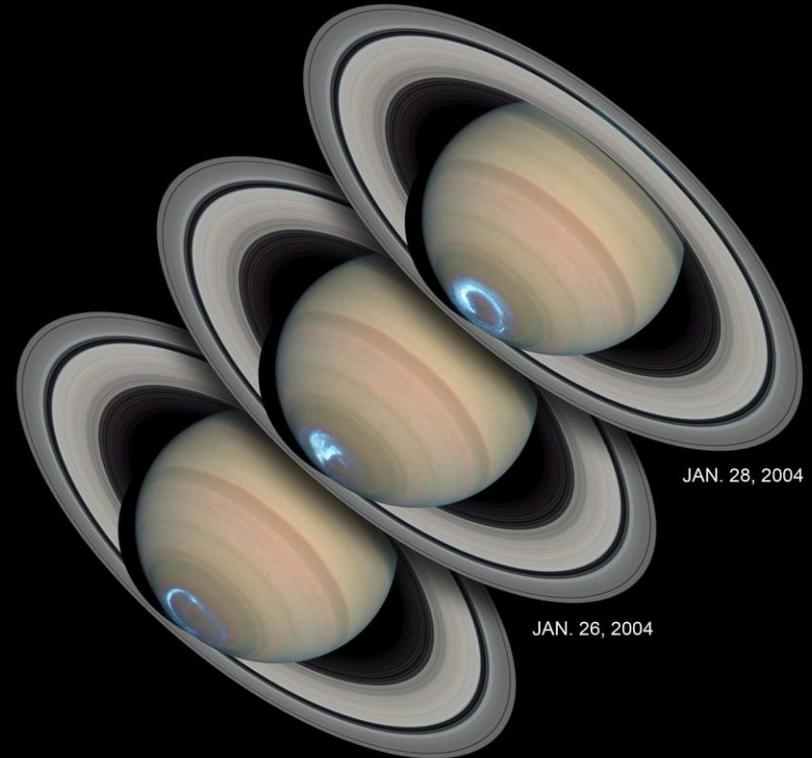


# Saturn

# زحل



JAN. 28, 2004

JAN. 26, 2004

JAN. 24, 2004

# معلومات عن زحل

Orbital semimajor axis	9.54 A.U. 1427 million km
Orbital eccentricity	0.054
Perihelion	9.02 A.U. 1349 million km
Aphelion	10.05 A.U. 1504 million km
Mean orbital speed	9.65 km/s
Sidereal orbital period	29.42 tropical years
Synodic orbital period	378.09 solar days
Orbital inclination to the ecliptic	2.49°
Greatest angular diameter, as seen from Earth	21"
Mass	$5.68 \times 10^{26}$ kg 95.16 (Earth = 1)
Equatorial radius	60,268 km 9.45 (Earth = 1)
Mean density	$687 \text{ kg/m}^3$ 0.125 (Earth = 1)
Surface gravity (at cloud tops)	$10.4 \text{ m/s}^2$ 1.07 (Earth = 1)
Escape speed	35.5 km/s
Sidereal rotation period	0.44 solar days
Axial tilt	26.73°
Surface magnetic field	0.67 (Earth = 1)
Magnetic axis tilt relative to rotation axis	0.8°
Surface temperature	97 K (at cloud tops)
Number of moons	30

# أقمار زحل

**TABLE 12.2** The Major Moons of Saturn\*

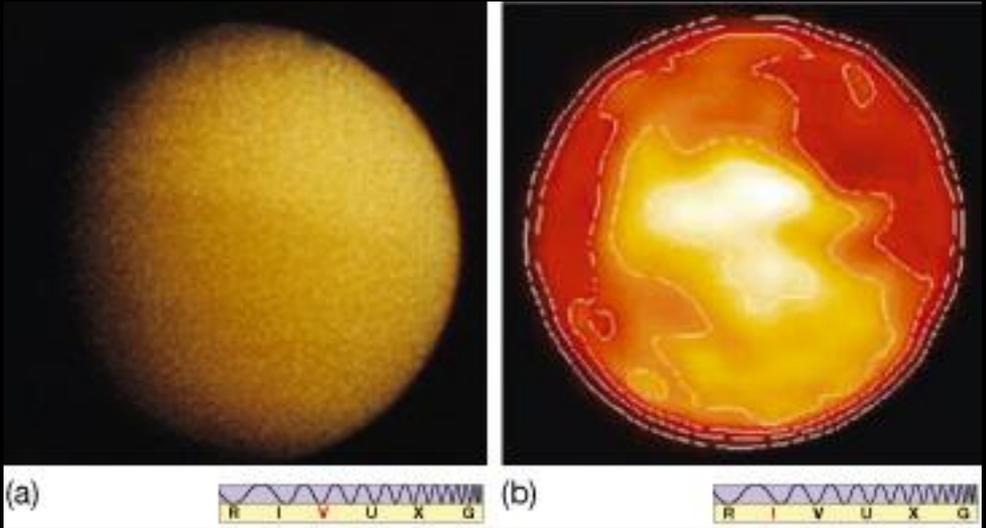
NAME (g/cm <sup>3</sup> )	DISTANCE FROM SATURN (km)	(planet radii)	ORBIT PERIOD (days)	SIZE (longest diameter, km)	MASS** (Earth Moon masses)	DENSITY (kg/m <sup>3</sup> )	
Pan	133,600	2.22	0.57	20	$4 \times 10^{-8}$		
Atlas	138,000	2.28	0.60	37			
Prometheus	139,000	2.31	0.61	148	$1.9 \times 10^{-6}$		
Pandora	142,000	2.35	0.63	110	$1.8 \times 10^{-6}$		
Epimetheus	151,000	2.51	0.69	138	$7.5 \times 10^{-6}$		
Janus	151,000	2.51	0.69	199	$2.7 \times 10^{-5}$		
Mimas	186,000	3.08	0.94	398	0.00051	1100	1.1
Enceladus	238,000	3.95	1.37	498	0.00099	1100	1.1
Calypso	295,000	4.89	1.89	30			
Telesto	295,000	4.89	1.89	30			
Tethys	295,000	4.89	1.89	1060	0.0085	1000	1.0
Dione	377,000	6.26	2.74	1120	0.014	1400	1.4
Helene	377,000	6.26	2.74	32			
Rhea	527,000	8.74	4.52	1530	0.032	1200	1.2
Titan	1,220,000	20.3	16.0	5150	1.83	1900	1.9
Hyperion	1,480,000	24.6	21.3	370			
Iapetus	3,560,000	59.1	79.3	1440	0.022	1000	1.0
Phoebe	13,000,000	215	-550 <sup>†</sup>	230			

\*Does not include the 12 recently discovered small moons described in the text. All are small and orbit far from the planet. Their orbits are as yet undetermined.

\*\*Mass of Earth's Moon =  $7.4 \times 10^{22}$  kg =  $1.3 \times 10^{-4}$  Saturn masses.

<sup>†</sup>Indicates a retrograde orbit.

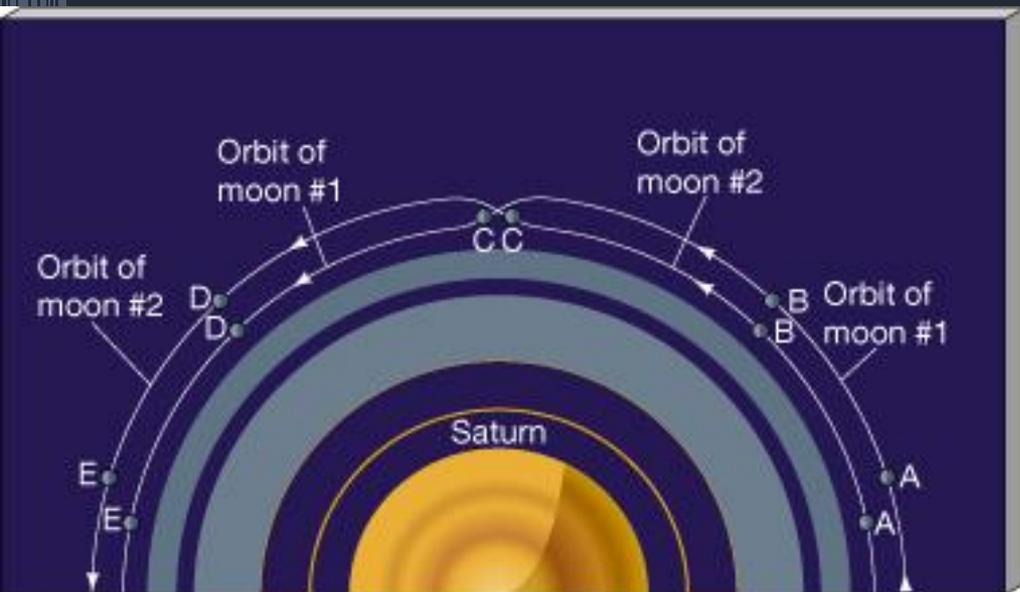
# القمر تيتان أكبر أقمار زحل



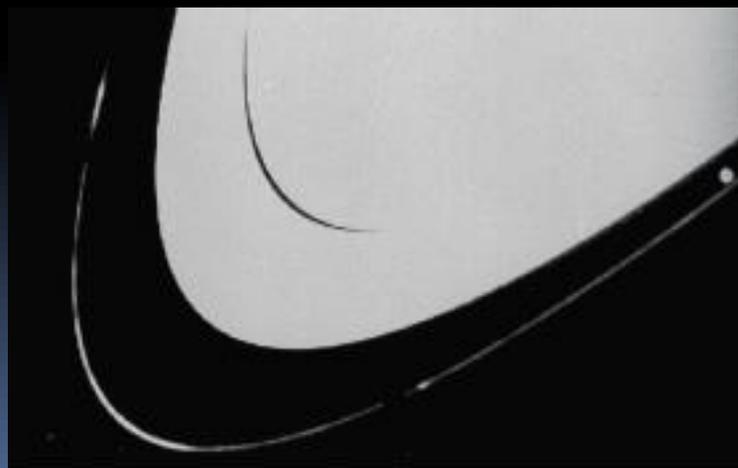
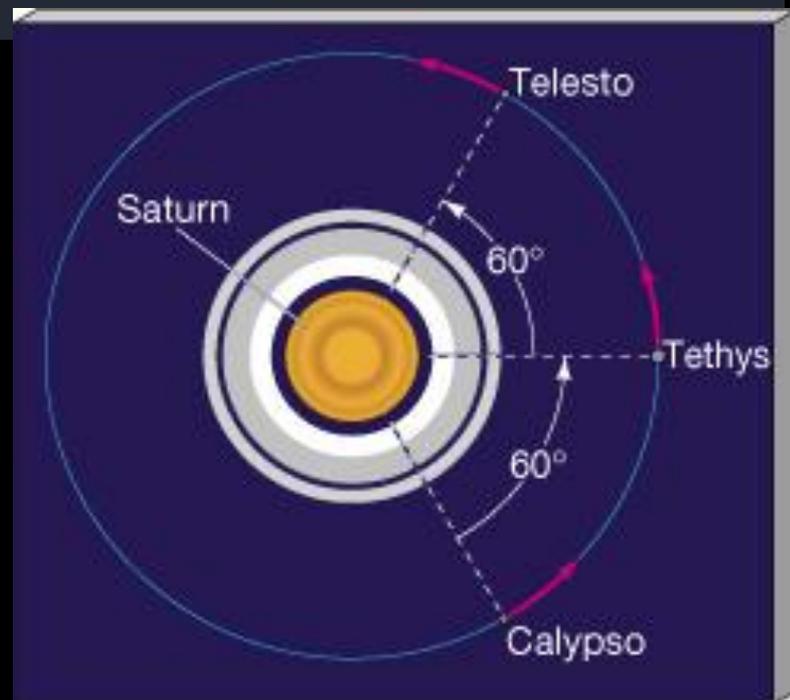
## بعض أقمار زحل مقارنة بقمر الأرض



# ذات المدارات المتبادلة

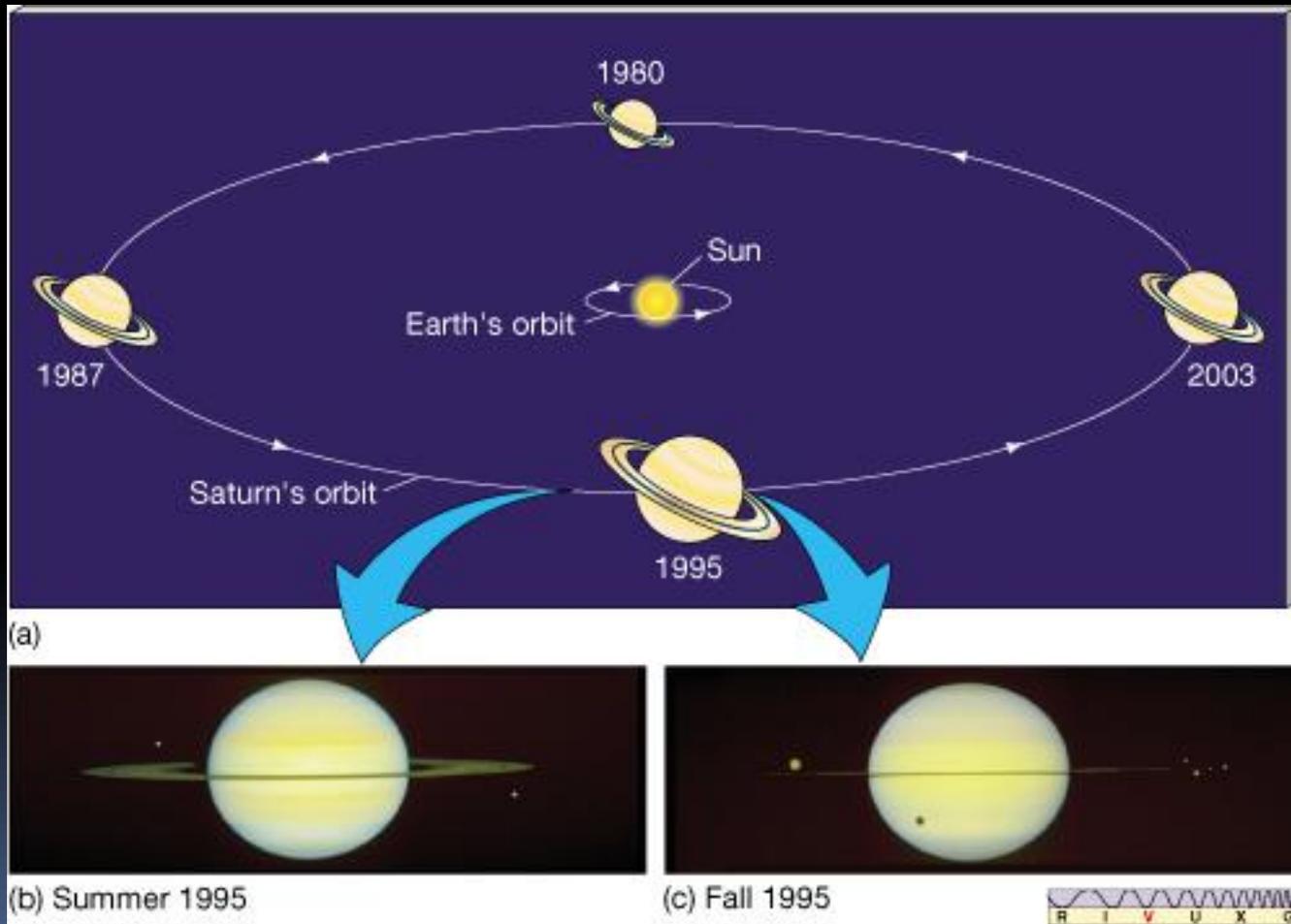


# مدارت لاجرانج



■ أقمار راعي الغنم

# حلقات زحل

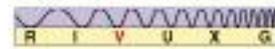
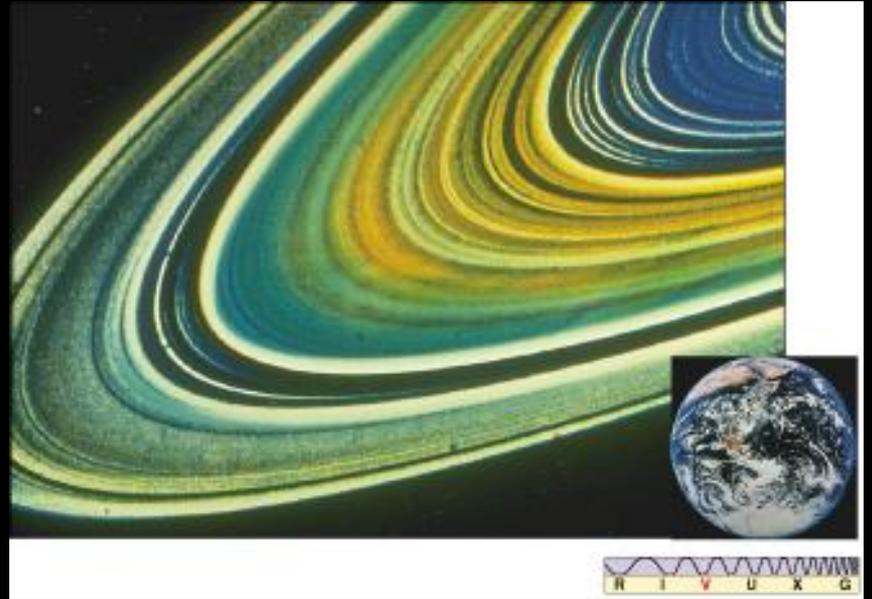


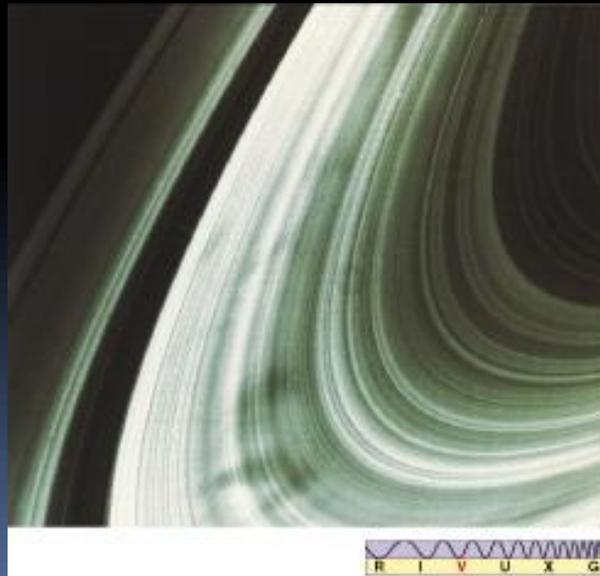
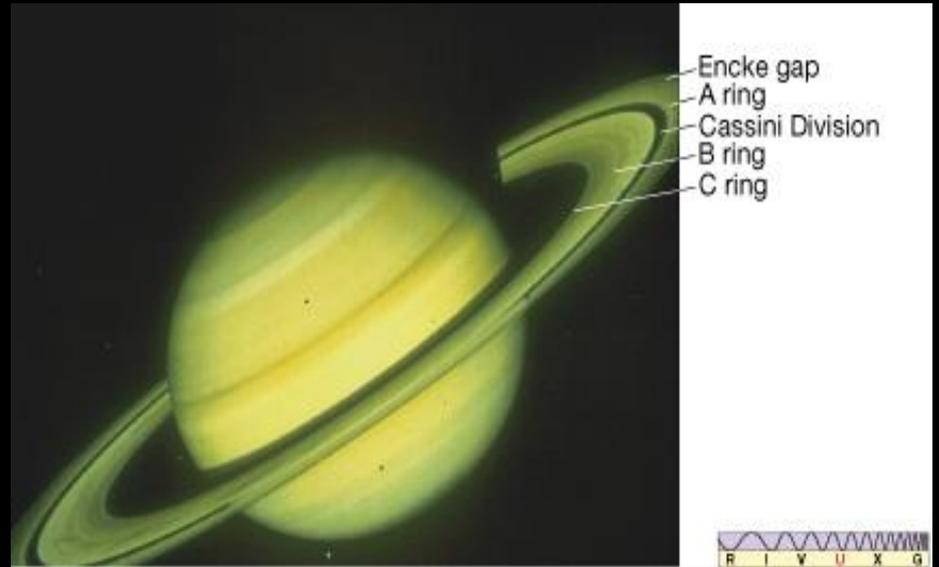
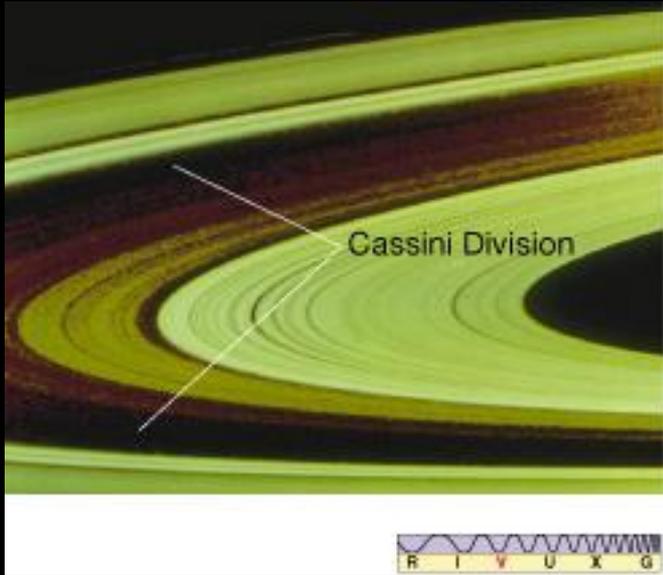
## معلومات عن الحلقات

**TABLE 12.1** The Rings of Saturn

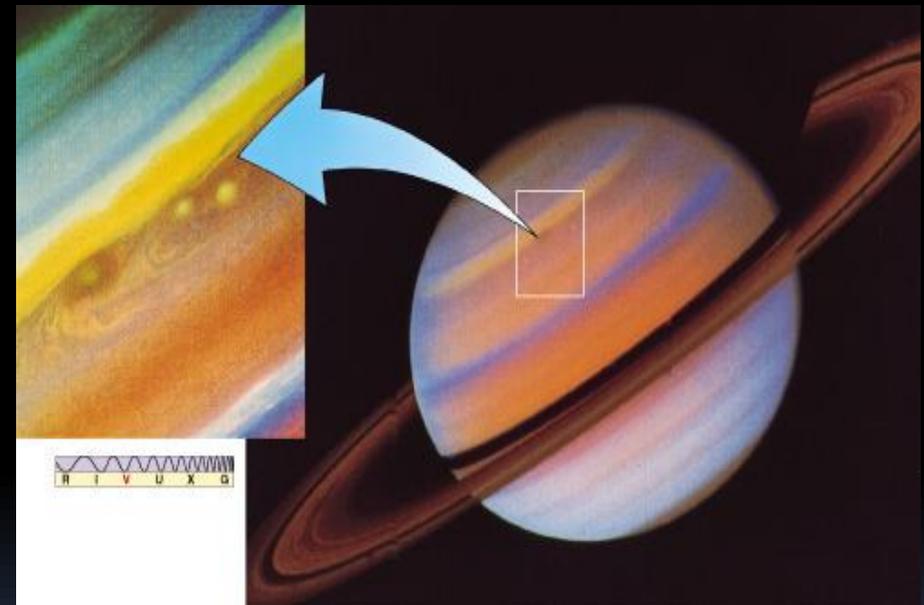
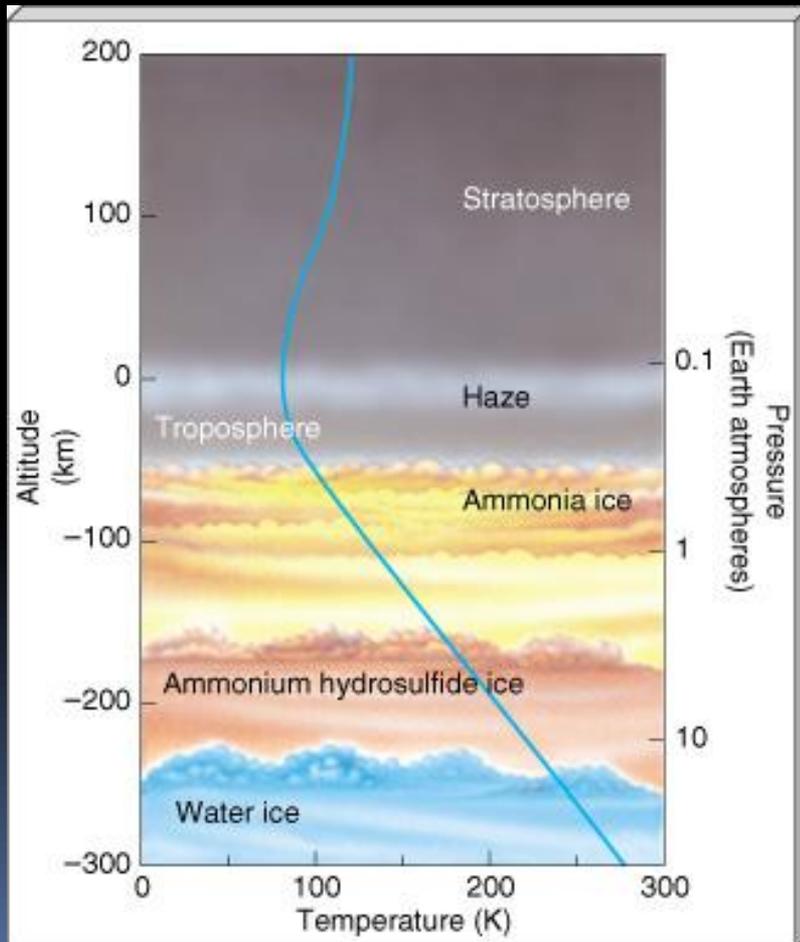
RING	INNER RADIUS		OUTER RADIUS		WIDTH (km)
	(km)	(planet radii)	(km)	(planet radii)	
D	67,000	1.11	74,700	1.24	7700
C	74,700	1.24	92,000	1.53	17,300
B	92,000	1.53	117,500	1.95	25,500
Cassini Division	117,500	1.95	122,300	2.03	4800
A	122,300	2.03	136,800	2.27	14,500
Encke gap*	133,400	2.22	133,700	2.22	300
F	140,300	2.33	140,400	2.33	100
G	165,800	2.75	173,800	2.89	8000
E	180,000	3.00	480,000	8.00	300,000

\*The Encke gap lies within the A ring.





# جو زحل



# التركيب الداخلي

