

# A list of historical comets observed at plural sites: the beginning of astronomy in Japan and Korea

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**Abstract.** Comets generally stay long in the sky and can be seen from many places on the surface of the Earth. We are interested in historical comets which were observed at plural sites. We have shown in a previous work (Tanikawa & Sôma, 2008) that in the seventh century, five comets were observed independently in China and Japan. From this fact and other data, we deduced that Japanese observational astronomy started in the seventh century. We know that, other than China and Japan, Korea and Vietnam had observational astronomy before the 9th century. We look for historical comets observed at plural sites by surveying the existing literature of respective countries. Examining the independence of the records, we provide a list of comets observed independently at plural sites. This strengthens the reliability of the records of comets. The list can be used for other purposes.

**Keywords.** Japanese and Korean astronomy, seventh century, plural observations

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## 1. Introduction

The astronomy until the end of the 17th century was the kinematics of bodies in the Solar System. More concretely, main contents of astronomy were (1) motion of the Sun; (2) motion of the Moon; (3) motion of five planets among constellations; (4) maintenance of constellations as a coordinate system on the celestial sphere. Dynamics has been incorporated since 1687 when I. Newton published *Principia*. The Solar System was the unique world until 1838 when the parallax of stars was measured.

Careful astronomers observed the sky day and night. They noticed unusual phenomena in the sky. Among them were gueststars (novae) and comets. These objects stayed long in the sky, so some of them were observed in plural civilized countries. We present a list of these comets until the end of the eighth century. Chinese and Korean Data have been taken from the list compiled by Hasegawa (1979). Vietnamese data are from Ho Peng-Yoke (1964). We divide Korean data into those of three kingdoms.

The beginning of observational astronomy in the east Asian countries, in particular, in Japan and Korea are interesting. The main relevant data are solar eclipses, lunar eclipses, and occultations of planets by the moon. These are useful since the existence of these phenomena can be checked by modern calculations. In this sense, comet records are auxiliary. However, records of comets observed in different places are important because the reliability becomes high. We have shown that Japanese observational astronomy began in the 7th century using solar and lunar eclipses, occultations, and five common comets with China and/or Korea. We tried to show the beginning year of the astronomy in the three kingdoms of Korea. We have not been successful. We guess that the data were lost.

## 2. A list of comets observed at Plural sites until the eighth century

Ho Peng-Yoke admits that earlier Vietnamese data are taken from Chinese sources. Some of Korean data of three Kingdoms may have been also taken from Chinese sources.

No.	Date of discovery	Country	No.	Date of discovery	Country	
12	-1495	Syria, Chaldea, India(?)	245	302	May-June	China, Baekje
59	-203	Aug.-Sept	249	305	Nov. 21	China, Rome
74	-156	Oct.	253	336	Feb. 16	China, Baekje, Rome
75	-154	Winter	259	363	Aug.-Sept.	China, Rome
77	-153	Feb.	266	383	Oct.-Nov.	Goguryeo, Europe
78	-147	May	270	390	Aug. 7	China, Baekje, Rome
80	-146	Aug.6	275	400	Mar. 19	China, Baekje, Rome
81	-146	Nov.	284	415	June 24	China, Baekje
84	-137	Aug.	287	418	June 24	China, Europe
90	-134	Sept.	288	418	Sept. 15	China, Europe
95	-118	May	289	419	Feb. 17	China, Baekje
		Asia Minor	291	421	Jan.-Feb.	China, Europe
107	-86	Aug.	292	422	Mar. 26	China, Europe
119	-48	Apr.	301	442	Nov. 10	China, Europe
122	-43	May-June	305	451	June-July	China, Rome
127	-31	Feb.	307	453	Feb.-Mar.	China, Rome?
132	-11	Aug. 26	315	467	Feb. 6	China, Europe
135	-3	Apr.	319	498	Dec.	China, Europe
144	54	June 9	326	530	Aug. 29	China, Rome
146	60	Aug. 9	333	539	Nov. 17	China, Europe
147	61	Sept. 27	334	541	Feb.-Mar.	China, France
148	64	May 3	354	582	Jan. 15	China, France
157	76	Oct. 7	361	595	Jan. 9	China, Baekje, Europe
159	79	Oct. 7	376	626	Mar. 26	China, Europe
161	85	June 1	379	634	Aug.-Sept.	China, Japan
171	128	Sept.-Oct.	381	639	Mar. 5	Baekje, Japan
178	149	Oct. 19	392	668	May-June	China, Goguryeo
181	158	Mar.-Apr.	396	676	Sept. 4	China, Silla, Japan, Europe
182	161	June 14				
185	182	Aug.-Sept.	398	681	Oct. 17	China, Japan
191	191	Oct.	399	683	Apr. 20	China, Silla
		Rome	400	684	Sept. 6	China, Japan
196	200	Nov. 6	402	684	Dec.-685	Jan. Japan, Europe
197	204	Dec.-205	412	712	July-Aug.	China, Europe
203	217	Nov.-Dec.	424	744	Winter	Korea, Syria
204	218	Apr.-May	428	760	May 16	China, Europe
228	269	Oct.-Nov.	435	770	May 26	China, Silla, Japan
243	300	Dec.-301	436	773	Jan. 15	China, Japan

Dates in the table are given by the Julian Calendar.

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