

Fornax

Subjects: [Astronomy & Astrophysics](#)

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Fornax, Latin for "furnace," is a small and faint constellation located in the southern celestial hemisphere. Despite its modest size, Fornax is home to several notable deep-sky objects, including the Fornax Cluster of galaxies. French astronomer Nicolas Louis de Lacaille bestowed the name "Fornax" upon this constellation in 1756, and it is now recognized as one of the 88 modern constellations.

astronomy

constellation

IAU

galaxy cluster

1. Introduction

Fornax, Latin for "furnace," is a small constellation located in the southern celestial hemisphere. It was introduced by French astronomer Nicolas Louis de Lacaille in 1756, as part of his comprehensive survey of the southern sky during his expedition to the Cape of Good Hope. Fornax occupies an area of approximately 398 square degrees and is bordered by the constellations of Cetus, Sculptor, Phoenix, and Eridanus. Fornax is positioned at celestial coordinates between approximately 1h 20m and 3h 25m of right ascension and -28° to -53° of declination. Its location in the southern sky makes it predominantly visible from southern latitudes, offering stargazers and astronomers in the southern hemisphere the opportunity to explore its celestial wonders (**Figure 1**).

The constellation's name, "Fornax," reflects its association with a furnace or kiln, likely inspired by Lacaille's observations of the southern sky during his astronomical expeditions. Despite its modest size and relatively faint stars, Fornax holds significance in astronomical observation due to its association with several notable deep-sky objects. One of the most prominent features within Fornax is the Fornax Cluster, a rich galaxy cluster located approximately 60 million light-years away from Earth. Comprising hundreds of galaxies, the Fornax Cluster offers astronomers valuable insights into galaxy formation, dynamics, and evolution.

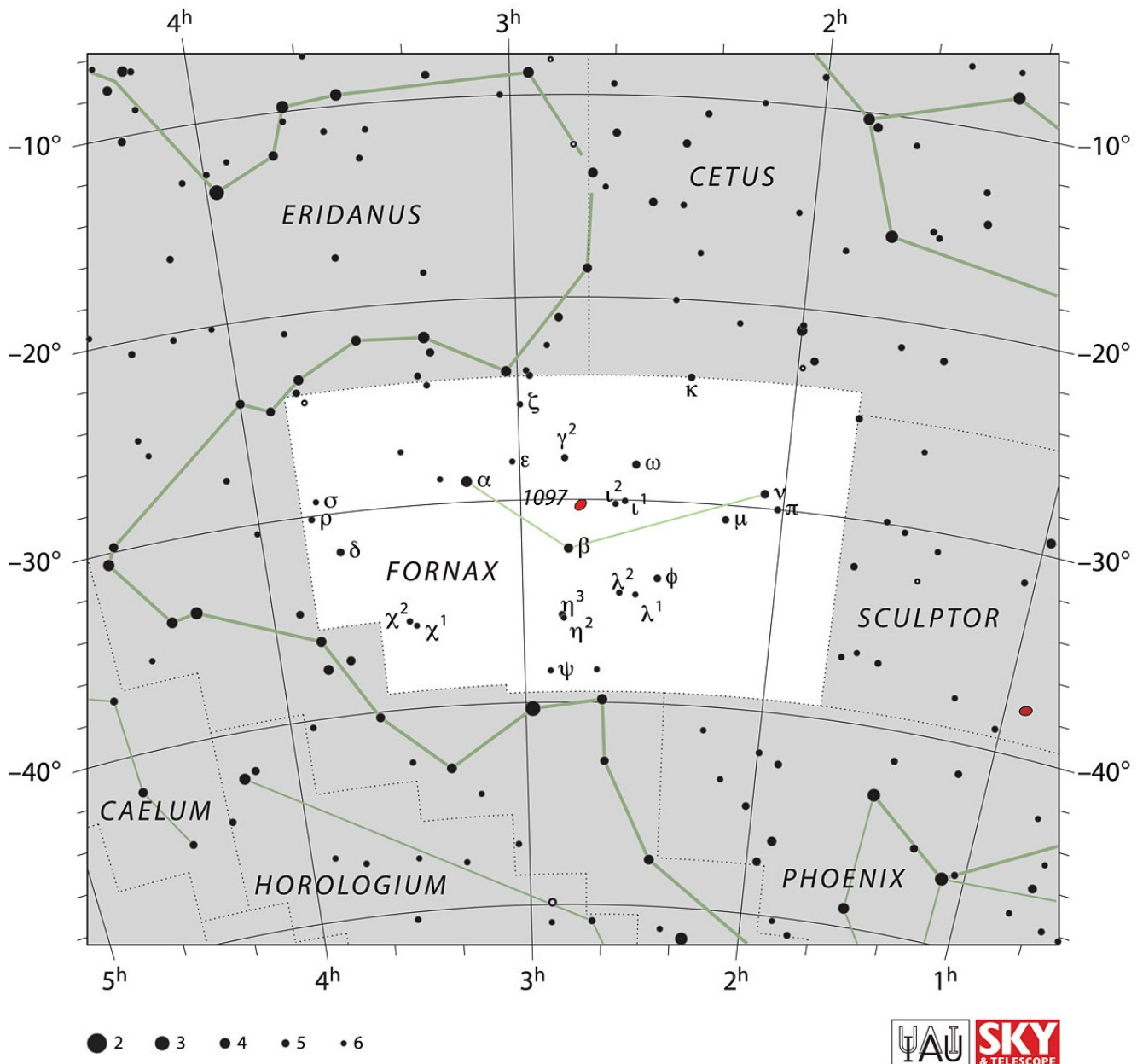


Figure 1. IAU chart of Fornax. Source: <https://www.iau.org/static/archives/images/screen/for.jpg>. Credit: IAU and Sky & Telescope. Reproduced under CC BY 4.0 license.

2. Historical Background and Mythology

Fornax, the constellation named after the Latin word for "furnace," has a relatively short history compared to many other constellations. It was introduced by French astronomer Nicolas Louis de Lacaille in the 18th century during his southern sky survey, making it one of the 88 modern constellations recognized by the International Astronomical Union. In terms of historical background, Fornax lacks the rich mythological narratives that characterize many other constellations. Lacaille named it based on its resemblance to a furnace or kiln, rather than drawing from ancient mythology or folklore. The name "Fornax" reflects the practical and scientific approach that

Lacaille adopted in naming the southern constellations he observed during his expedition to the Cape of Good Hope.

3. Notable Stars

Alpha Fornacis (α Fornacis): Alpha Fornacis is the brightest star in the Fornax constellation, although it is still relatively faint. Also known as Dalim, it has a visual magnitude of approximately 4.02. Alpha Fornacis is a binary star system composed of two main-sequence stars orbiting each other. The primary component is a yellow-white dwarf star, while the secondary component is a fainter companion. They orbit each other with a period of about 30.6 years.

Beta Fornacis (β Fornacis): Beta Fornacis is another notable star in Fornax, although it is dimmer than Alpha Fornacis. It has a visual magnitude of around 4.47 and is also known as Fornacis. Beta Fornacis is a binary star system consisting of two main-sequence stars orbiting each other. The primary component is a yellow-white dwarf star, while the secondary component is a fainter companion. They have an orbital period of approximately 26.6 years.

Nu Fornacis (ν Fornacis): Nu Fornacis is a triple star system located in the Fornax constellation. It has a visual magnitude of approximately 4.68. Nu Fornacis consists of a binary pair (Nu Fornacis A and B) orbiting each other, with a third star (Nu Fornacis C) in a wider orbit around the binary pair. The primary component of the binary pair is a yellow-white dwarf star, while the secondary component is a fainter companion. They have an orbital period of about 5.1 years.

4. Deep-Sky Objects

Fornax Cluster (Abell 1367): The Fornax Cluster is one of the richest galaxy clusters in the southern sky and is the most prominent feature within the Fornax constellation. Located approximately 60 million light-years away from Earth, the Fornax Cluster is composed of hundreds of galaxies, ranging from massive elliptical galaxies to smaller spiral and irregular galaxies. The cluster is dominated by massive elliptical galaxies, which are concentrated toward the central regions. These galaxies have undergone multiple mergers and interactions over billions of years, leading to the formation of large galactic structures within the cluster. In addition to massive galaxies, the Fornax Cluster also contains numerous dwarf galaxies. These smaller galaxies are less luminous and have lower mass compared to their larger counterparts. Some dwarf galaxies within the cluster exhibit signs of recent star formation, indicating ongoing dynamical processes and interactions within the cluster environment.

NGC 1097: NGC 1097 is a barred spiral galaxy located in the Fornax constellation. It is approximately 45 million light-years away from Earth and is notable for its intricate spiral arms and a prominent central bar structure. NGC 1097 also hosts a supermassive black hole at its center, which is actively accreting matter and emitting intense radiation across the electromagnetic spectrum.

NGC 1365: NGC 1365 is another barred spiral galaxy situated in Fornax, approximately 56 million light-years away from Earth. It is renowned for its striking spiral arms and a central bar that extends across the galaxy's nucleus. NGC 1365 is a popular target for amateur astronomers due to its relatively bright appearance and distinctive structure.

NGC 1316 (Fornax A): NGC 1316, also known as Fornax A, is an elliptical galaxy located in the Fornax constellation. It is approximately 75 million light-years away from Earth and is notable for its complex structure, including dust lanes and a prominent central bulge. NGC 1316 is believed to be the result of a merger between two galaxies, leading to intense star formation and the presence of a supermassive black hole at its center.

NGC 1399: NGC 1399 is a giant elliptical galaxy located near the center of the Fornax Cluster. It is one of the brightest galaxies in the cluster and is approximately 65 million light-years away from Earth. NGC 1399 is surrounded by a system of globular clusters, which are tightly bound groups of stars orbiting the galaxy's core. Studying NGC 1399 and its associated globular clusters provides valuable insights into the formation and evolution of galaxies within the Fornax Cluster.

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