

# Where does the Amazon start? Study points to source

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Solimões, the section of the upper Amazon River. Image: Wikipedia.

(Phys.org) —The Amazon is believed to be the world's largest river. A tough question has been where that river actually begins. Naming its source has evidently been difficult as centuries of efforts indicate. With technology and scholarship on hand why should deciding on the true source be so difficult? Various sites in Peru have been pinned as the source through the years. A study published online this month in the journal *Area* makes the case for Amazon's source to be the Mantaro River in southwestern Peru, even though the Apurímac River has been said since 1971 to be the source. Jane Lee of the *National Geographic* wrote on Thursday that, if accepted, the newer findings could affect measurements of the length of the Amazon River. That length is measured at about 4,000 miles by the U.S. Geological Survey. The discovery would add 47 to 57 miles to the Amazon's length.

Exploring the source of the Amazon in this recent effort made use of a variety of measurements including GPS tracking data and satellite images. Explorer and kayaker James "Rocky" Contos embarked on the effort to identify the source. The study in the journal *Area*, authored by Contos and anthropologist and archaeologist Nicholas Tripcevich, is titled "Correct placement of the most distant source of the Amazon River in the Mantaro River drainage." They wrote that "Our results reposition the 'most distant source' of the Amazon to a more tropical location, change the uppermost ~800 km of river to this point, and add 75–92 km to the river's maximal length."

Contos, a kayaker, had said elsewhere in a biographical sketch: "In 2012 I discovered the true source of the Amazon, [paddled](#) all the headwaters of the Amazon and then completed the journey to the Atlantic, making the first complete descent of the Amazon River."

Why had the Mantaro been overlooked before this recent naming? The authors say that a [bend](#) or kink in the river's lower half makes it look much shorter than it really is. Also, how do you define a river's source? The definition affects the determination of the Amazon's source, and there appears to be more than one definition. An historical definition of the "source" of a [river](#) is the point at which water must flow the greatest distance to flow into the river.

Lee said that, according to the geographer at National Geographic, Juan Valdes, continuously flowing water is important in determining the true source of a river. Lee also said that the internationally accepted definition is the most distant point of a river's longest tributary that flows continuously. The Mantaro River is said to run dry for about five months of the year.

The Smithsonian National Air and Space Museum's Andrew Johnston, geographer, considers the new study as providing a fresh perspective,

according to Lee's report in *National Geographic*. Assuming the measurements stand up to scrutiny, said Johnston, the Mantaro could be considered as a new source of the Amazon. Scientists, he added, should view three of proposed source tributaries—the Marañón,—throughout the 1700s, the Marañón River in northern Peru had the distinction of being the Amazon's source—the Apurímac, and the Mantaro—in order to truly understand the Amazon.

**More information:** Correct placement of the most distant source of the Amazon River in the Mantaro River drainage, *Area*, Volume 46, Issue 1, pages 27–39, March 2014. DOI: 10.1111/area.12069

### **Abstract**

The Amazon River ('Río de las Amazonas') has the highest discharge of any river in the world and is also the longest or second longest. Its source has therefore intrigued scholars and explorers for centuries. A river's source is often defined as the most distant upstream point in the drainage basin. For the past several decades, the longest upstream extension of the Amazon River has been held to be the Nevado Mismi area of the Río Apurímac drainage. We overturn this longstanding view by employing topographic maps, satellite imagery, digital hydrographic datasets and GPS tracking data to show that the Cordillera Rumi Cruz ( $10.7320^{\circ}\text{S}$ ,  $76.6480^{\circ}\text{W}$ ; elevation  $\sim 5220$  m) in the Río Mantaro drainage lies 75–92 km further upstream than Nevado Mismi. We compare various methods for measuring each of the Río Apurímac and Río Mantaro lengths, and show that high-resolution satellite imagery and GPS tracking most closely follow the path of the water. Our results reposition the 'most distant source' of the Amazon to a more tropical location, change the uppermost  $\sim 800$  km of river to this point, and add 75–92 km to the river's maximal length.

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