

# A new meteor fell in the Igdi (Tata, Morocco) "sowing panic among the inhabitants"

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On the evening of July 12, 2017 at 22:10 GMT a bright bolide was observed by thousands of eyewitnesses in an area distant by 140 km from the South of the Tata town, in the rural commune of Ait Ouabelli, in South-East Morocco. A terminal fragmentation and sound phenomena were perceived near the end point of the trajectory. The bolide has traveled from North to South and has experienced several fragmentation events along its atmospheric trajectory. This extraordinary and rare event is extremely valuable to the scientific community and it was the brightest and most comprehensively observed fireball in Morocco's astronomical history.

Meteorite Provisional name	Fall observation date	Province Country
Igdi 2	July 12, 2017 at 22:10	Tata Morocco

## Introduction

Meteorite falls, also called observed falls, are meteorites collected after their fall from space and were observed by people or automated devices. So, it constitutes a great source of information about the history of the solar system. For this, their collection is important for scientific study as they offer fresh materiel (Khiri and Ibhi, 2015). However, on average, only five to six meteorites have been seen to fall annually throughout the world and recovered over the two last centuries (Graham et al., 1985; Ibhi, 2014). Some of these meteorites have great scientific and cultural value, as the Martian observed fall "Tissint" (Chennaoui et al., 2012; Ibhi, 2013).

In this note we try to describe the phenomes that have accompanied this fall and to share the results of our study on one of its fragments.

## Conclusion

Once again in Morocco we can't predict these objects and judge the velocity at which they are falling and where it would impact. Fortunately, with the aid of nomads and rural population who are interested in this spectacular phenomenon and who respect scientists and help them with the collection of meteorites, we were able to carry out a preliminary study on this new fall.

The study is intended to serve as a case example for post-event data recovery and trajectory reconstruction in these areas not covered by sky-camera networks and with limited scientific infrastructure.

## Collecting observations

Eyewitnesses in several localities (Agadir, Tafraout, Tata, Tihirt, Fom El hisn, Igdi, Boufalouss, Mofzou, Ait-Ouabelli, etc...) saw a brilliant light which shot across the night sky. It seemed to be brighter than an electric welding light. It was at first yellow, and then turned red-green before it split into three parts. Furthermore, the detonation energy has shaken the doors of the houses and the curtains of the garages. We thanked God no big fragments had fallen in populated areas.

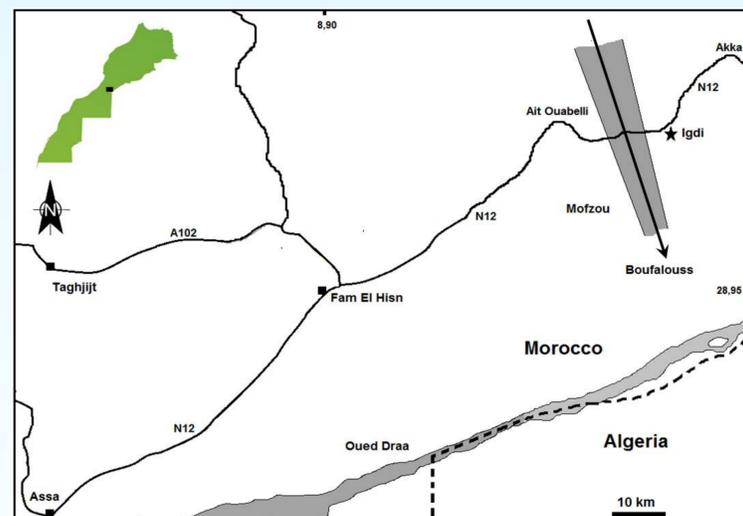
Immediately after the fireball event the hundreds of people moved to the site from surrounding Douars, villages and collectors of meteorite fragments from other cities (Erfoud, Laayoune, etc...) to search the meteorite fall despite the high temperature that has reached 50°C. The first fragments were recovered the following day between Igdi, Ait Ouabelli, Boufalouss and Mofzou douars. Most of the specimens found were quickly identified as meteorites because they exhibit a prominent fusion crust that covers a part of their surface.



## Spatial distribution

A large number of eyewitness accounts were recorded and mapped by GPS. Now we are in a position to draw the distribution ellipse of the fall of the Igdi meteorite, which starts in North of Igdi and continues into the south direction above the natural barrier of the "Jebel Bani" which constitutes the border between Morocco and Algeria.

The strewnfield of Igdi is situated at about 140 km of the south of Tata city in the region of Guelmim-Es Smara. The mapping of the locations, where the fragments of the meteorite were found, showed us that the fireball exploded into many fragments that are scattered on a field with a NNW to SSE direction about 25 km long, which is also the flight direction of the meteorite according to the observations of the nomads.



The fragment provided to researchers at the Ibn Zohr University show of the magnetic susceptibility is about 3.62 and the density is about 3.21. These values corresponds well to the confidence interval of the LL6-7 type ordinary chondrite meteorites.