

I. How do we distinguish between fact and opinion?

A statement that can be backed up with evidence and verified in some way - F
Someone's point of view, judgment or belief – O

II. Read through the beginnings of some sentences and decide whether they express facts or opinion.

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|---|--|
| 1. This review has <u>demonstrated</u> ...F | 5. The research team <u>argues that</u> ...O |
| 2. <u>According to the results</u> of the latest poll...F | 6. The latest <u>findings confirm</u> ...F |
| 3. In Professor Donald's <u>view</u> ...O | 7. Most experts in this field <u>suspect that</u> ...O |
| 4. The company <u>claims that</u> ...O | 8. Researchers have recently <u>discovered</u> ... F |

Underline the key words that made you arrive at your decision

III. Read the text below and find synonyms (might be phrases) to the words or definitions from 1 to 15 (first two paragraphs: 1-6, para 3: 7-11, para 4/table: 12-15).

WORDS OFTEN USED WITH FACTS, EVIDENCE and DATA

Researchers try to establish the facts. They hope that the facts will 1.bear out or support their hypothesis. Most carefully check their facts before presenting them to others although there are, of course, dishonest people prepared to 2.distort the facts in order to claim that their facts are interesting, 3.relevant, undeniable or little-known.

Notice how "fact" is also often used in sentences like the following:

It is hard to 4.account for the fact that the star population is confined to a nearly circular region.

The problem 5.stems from the fact that there is a basic conflict of interests.

The lecturer 6.drew attention to the fact that the results had been plagiarized.

1.confirm, 2.change, 3.connected to the topic being discussed, 4.explain why, 5.has arisen because, 6.emphasised that

Researchers may look for, collect, examine and consider evidence. The evidence they collect may point to or suggest a conclusion. If the evidence is growing or widespread, it may serve to support a theory. In writing up their research they aim to provide or offer sufficient evidence to support their theories. They are happy if the evidence they find is convincing or powerful and are less happy if the evidence is 7.flimsy or 8.conflicting. They are pleased if new evidence 9.comes to light and if they find 10.abundant evidence. They may talk about finding 11.hard evidence.

7.not strong, 8.contradictory, 9.becomes known, 10.plenty of, 11.evidence which is reliable and can be proven (used mainly in spoken English)

The data is	<u>12.reliable.</u> <u>13comprehensive.</u> accurate. <u>14.empirical.</u>	You	15. <u>obtain</u> organize analyse interpret record	Data.	Data	suggests reflects indicates shows demonstrates	sth.
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12.can be trusted, 13.full, complete, 14.based on observation rather than theory, 15.get

IV. Find the odd one out

1. Thorsen's aim was to establish/check/bear out/present the facts.
2. The evidence suggests/points to/supports/emerges a different conclusion.
3. Lopez collected/reflected/obtained/recorded some fascinating data.
4. The writer provides some growing/telling/striking/illuminating examples.
5. The evidence Mistry presents is convincing/flimsy/vivid/conflicting.

V. Expressing opinion: complete the sentences with these words: stance, viewpoint, notion

1. She doesn't agree with the ___ notion ___ that boys and girls should be taught separately.
2. The government has made their ___ stance ___ on the boycott issue clear.
3. The article provides a different ___ viewpoint ___ on this difficult topic.
4. We must never accept the ___ notion ___ that intelligence is connected to race.
5. The article expresses his ___ viewpoint ___ on ITER and its feasibility.
6. "Russia will maintain current ___ stance ___ over Donbas," Garry Kasparov has said.

VI. Underline the phrases expressing opinion. _____

VII. Mark/ circle the phrases connected with presenting and analysing experimental evidence. kjkshad

An Optical Atmospheric Phenomenon Observed in 1670 over the City of Astrakhan Was not a Mid-Latitude Aurora

1. Introduction

A period of extremely low solar activity which took place during the second half of the 17th century – beginning of the 18th century (1645 – 1715), is called the Maunder minimum (MM). It is the subject of numerous investigations since it poses an important observational constraint on centennial evolution of solar activity (e.g. Sokoloff, 2004; Charbonneau, 2010). Although the very existence of the MM is known (e.g. Eddy, 1976; Eddy, 1983), the exact level of activity during that period is still discussed as new data are revealed and some old data are revisited (Vaquero et al., 2011; Vaquero and Trigo, 2014; Vaquero et al., 2015; Usoskin et al., 2015; Svalgaard and Schatten, 2016). Very recent estimates of the level of solar activity during the MM based in a revision of historical sunspot observations clearly imply very low values (Carrasco, Alvarez, and Vaquero, 2015; Carrasco and Vaquero, 2016; Usoskin et al., 2015; Vaquero et al., 2016). We note that a claim of a moderate level of solar activity during the MM (Zolotova and Ponyavin, 2015) was caused by misinterpretation of the data, as shown by Usoskin et al. (2015). Moreover, the existence of the MM and other similar grand minima of solar activity, which form a special quiet mode of the solar dynamo, is independently confirmed by cosmogenic isotope data for the last millennia (e.g. Beer, McCracken, and von Steiger, 2012; Steinhilber et al., 2012; Inceoglu et al., 2015; Usoskin et al., 2014; Usoskin et al., 2016). There are some records of auroras observed during the MM (e.g. Letfus, 2000), however all the European records are related to high geomagnetic

latitudes where auroras occur regularly (the auroral oval) even without geomagnetic storms and sunspots (Vázquez et al., 2016; Usoskin et al., 2015). On the other hand, there are also records from Korean chronicles that may be interpreted as auroras (Zhang, 1985; Lee et al., 2004). However, as noticed by Zhang (1985), most of these events were observed in the southern direction, which contradicts with the data from the neighboring China and Japan. Accordingly, the nature of these records is still debated (see discussion in Vázquez et al., 2016). A new result of the reanalysis of some data for the period of the MM has been published recently by Zolotova and Ponyavin (2016, ZP16 henceforth), who in particular stated that a strong mid-latitude aurora was observed during Summer 1670, i.e. during the deep phase of the MM:

“The Mazurinsky chronicler Peter Zolotarev (Buganov and Rybakov, 1968) described the observations of meteors by the Astrakhan guard of archers on 13 July 1718 (the year since the creation of the world, which means 1670) and auroral observations (“three pillars of different colors, like the heavenly arc in the cloud, and crowns of many colors on top” as translated by us) of the same guard (July–August 1670, according to Loysha, Krakovetsky, and Popov, 1989). Astrakhan is a Russian city located at latitude 46°, which means a strong geomagnetic storm and appearance of a large activity complex on the Sun.”

The aurora, discussed by ZP16, would have appeared at mid-latitude at $\approx 46^\circ$ geographic latitude. For 1670 this location had an $\approx 49^\circ$ geomagnetic latitude using the archeomagnetic model (Lichtet al., 2013). If confirmed, this would imply a strong geomagnetic storm during the deep phase of the MM and lead to a need to revisit our paradigm of the extremely quiet Sun during that time. However, as we argue in this article, this claim by ZP16 was caused by a misinterpretation of the original chronicle record written in the 17th-century Russian language. With a careful analysis of the chronicle and other historical sources we show that the event under question can not be an aurora borealis but rather a day-time optical atmospheric phenomenon, and accordingly the claim by ZP16 should be dismissed.

Follow up:

- Discuss how impersonal style is achieved in this text (mainly passives)

VIII. Find in the text above synonyms of the following:

1. create
2. restriction, limitation
3. happening every 100 years
4. guess, approximate calculation
5. allegation, assertion
6. negates, opposes
7. a person who shoots with a bow and arrows
8. large round stone, metal or wooden posts that are used to support something
9. model, pattern, prototype

Sources:

<http://www.sciencedirect.com>, seen on 4 May 2015

McCarthy, M. and F. O'Dell, 2008 *Academic Vocabulary in Use* CUP

<http://www.bbc.co.uk/skillswise/topic/fact-or-opinion>, seen on 4 May 2015

<https://arxiv.org/pdf/1612.00705.pdf> Solar Physics, seen on 21st May, 2018