

Upwards lightning

By IASToppers | 2023-03-31 15:30:00



Upwards lightning

Brazilian researchers recently took pictures of Upwards lightning.



[ref-KXAN]

About the Upward lightning:

- It is a phenomenon whereby a **self-initiated lightning** streak that develops from a **tall** object that travels **upward** toward an overlaying **electrified storm cloud**.
- For this to happen, **storm electrification** and the presence of a **cloud charge region** is required.
- The **vertical elevation** of a tall object **accentuates** the **electric field** present locally on the ground.
 - This results in conditions favourable for the **initiation** of an **upward streak** from **tall** object.
- It can also develop in response to an **electric field change** created by a nearby preceding **lightning flash**.
 - **Upward streak** is also called a **leader**.

Process of Upward lightning:

- This process is triggered by the **development** of the **stepped leader** travelling to the ground in a **millisecond**, leading to an **intensification** of the **positive** charge on the ground.
 - **Stepped leader** is a channel of **negative** charge that travels **downward** in a **zigzag** pattern from a **cloud**, nearly invisible to the human eye.
- As the **streaks** of the **stepped leader** keep streaking towards the ground, the **electrical charges** between the **leader tips** and the **tops** of tall objects on the ground keeps on **increasing**.
- In due course, these **forces** cause the **air** above these **tall** objects to **ionise** and starts turning

more **conductive**.

- With the **negative** charge repeatedly moving toward the **ground**, the **channel** of air just above the **tall objects** turns **positively** charged,
- This starts streaking **upwards** and is called an **upward streamer**.
- In due course, the **negatively**-charged, **downward**-moving **stepped leader** makes contact with one of the developing **positively**-charged **upwards streamers**.