Daily Mains Practice Question 04-07-2026

GS I - Geography

What is an Omega Block? Explain how it contributes to prolonged heatwaves in Europe. **(10 Marks, 150 words)**

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Answer

Introduction:

An Omega block is a large atmospheric circulation pattern resembling the Greek letter Ω. A high-pressure system gets trapped between two low-pressure systems, creating stagnant weather. This creates stagnant weather conditions that can persist for several days or weeks.

Main Body

How does the Omega Block contribute to prolonged heatwaves in Europe?

- **Stagnant atmospheric conditions** – The trapped pressure system creates stagnant weather conditions by preventing the normal west-to-east movement of weather systems.
- **Heat Dome formation** – A strong, persistent high-pressure system acts like a lid, traps and compresses hot air near the ground and creates a heat dome.
- **Blocks cooler Atlantic air** – It blocks the cooler Atlantic air from entering Europe, allowing hot air to remain over the region for a prolonged period.
- **Clear skies & intense solar heating** – The suppression of cloud formation and precipitation increases daytime temperatures, causing dry conditions and soil moisture depletion.
- **Weak Jet Stream** – A slower, meandering jet stream prevents the blocking pattern from breaking down quickly.
- **Warmer nights** – The trapped heat reduces night-time temperatures, keeping the atmosphere very cold.
- **Prolonged extreme weather** – Since the blocking pattern remains still, heatwaves continue for days or weeks, increasing dry conditions, wildfire incidence, water stress,

and heat-related mortality.

- **Climate change link** – Even if the Omega Blocks are natural atmospheric phenomena, climate change is making such blocking events more frequent and severe, amplifying the intensity and duration of European heatwaves.

Conclusion:

The recent European heatwave demonstrates how Omega Blocks can transform short-lived hot weather into prolonged extreme heat events leading to droughts, wildfires, agricultural losses, and health emergencies. Improving early warning systems, climate-resilient infrastructure, and heat action plans is essential to reduce their growing socio-economic and environmental impacts.

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