

Global topic is Malaria.

The student evidence included maps of Malaria Distribution, Climate Regions and Global Poverty Rates and a detailed poverty cycle.

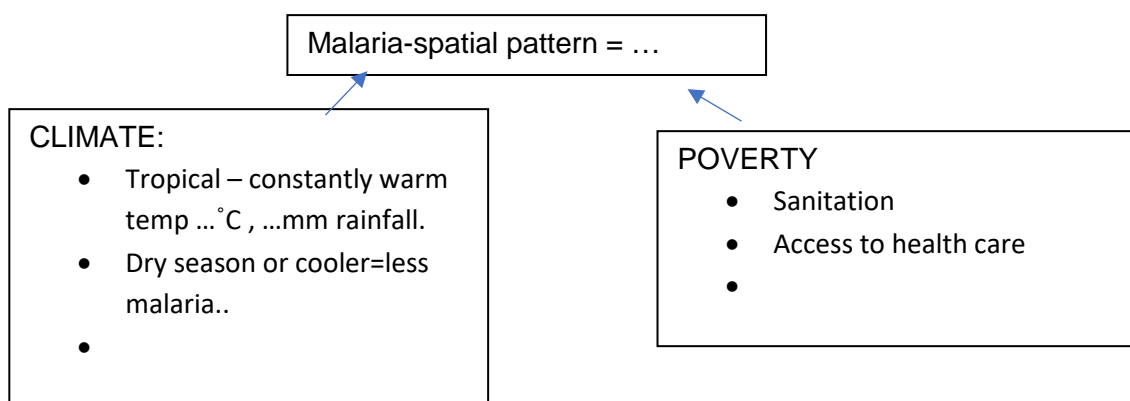
**Spatial pattern:**

Transmission of malaria forms a linear/banded spatial pattern generally between the Tropic of Capricorn and the Tropic of Capricorn, covering equatorial and tropical environments. The line appears unbroken and is made up of 3 distinct concentrations. (1)

The largest concentration on the linear band is in the central region of Africa. As shown on the map this concentration extends further south than the others reaching south of the Tropic of Capricorn into Madagascar, Mozambique, and northern Namibia and Botswana. The northern edge of this concentration follows the edge of the Sahara Desert. A significant characteristic of this concentration is that it has approximately 86% of all malaria cases and more than 90% of all deaths caused by malaria. (2)

The South Asian concentration is more widespread and pushes the linear band further to the north... The South American concentration is almost all south of the equator... When the concentrations are examined closely it is evident that they each show areas not affected by malaria and this breaks the linear pattern. For example, ... where environmental conditions such as high altitude change the climate conditions, long dry seasons and/or malaria eradication programmes have been effective. The linear band is broken in Peru because... (2)

**Causes plan:**



There are two key reasons for the linear pattern, climate and poverty. When comparing the malaria map with the climate map it matches the equatorial/tropical regions and on the poverty map there is a match with the highest rates of poverty. The linear band across the equatorial region clearly shows a relationship with tropical climate characteristics of consistently warm temperatures (18+ °C) and high rainfall (...mm). This factor also explains the dramatic fall in malaria rates in the cooler regions further north and south... (3)

A high malaria rates forming the concentrations on the linear band are related to less economically developed regions such as the central region of Africa, Amazon...

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In these less economically developed nations, most of the people live below the poverty line... and in communities where infrastructure is poorly developed and health care and education often limited if accessible at all. Most countries within the linear band formed by malaria transmissions also have limited funds to improve the situation. The average national investment in health care for countries forming the Central African concentration was..., in the Indian subcontinent it was ... From this how much would be available for targeting malaria?

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Poverty in the regions forming the linear band through the equatorial and tropical regions results in communities being left vulnerable to Malaria. Of the 738 million people globally, who lack access to clean water, 35% are living in the Central Africa concentration where approximately 49% of the population lives on less than \$1.25 a day.

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In regions where rainfall is high and sanitation not developed there is an increase of stagnant water and in the warm tropical environment this attracts the infected mosquitos and is a breeding ground for Malaria... 98% of malaria deaths occur in 35 countries concentrated in tropical and sub-tropical regions, of these 30 are in the Central African concentration and the remaining 5 are in the South Asia concentration...

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Investment in programmes to eradicate malaria can explain some of the breaks in the linear pattern. International and regional organisations like WHO, USAID and AMI (Amazon Malaria Initiative)... often fund and monitor the eradication programmes. Countries that have contributed to the break in the linear band include Belize, El Salvador, Ecuador, Surinam, Peru, Botswana, Malaysia... Belize is a member of AMI and no deaths due to malaria have been reported since 2006...

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