CLIMATES PART 1

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INTRODUCTION

When we keep terrarium animals, it means that we take living creatures out of their natural environment and submit them to an environment, that is artificial in every way possible. Even the climate is artificial. In this first article, the length of night and day is the central issue.

DAY AND NIGHT LENGTH

The length of day and night varies globally very greatly. This is caused by the relation of two factors, namely the geographical latitude position of the "place" and the somewhat sloped axis of the earth. The geographical latitude position (measured in degrees) is the distance from the "place" to the equator. It runs from 0 degrees (equator) to 90 degrees (the poles). The further from the equator the higher the geographical latitude.

The geographical latitude, has influence on the angle of attack from the suns rays. The further from the equator, the lower the angle of attack of the suns rays. This means the same amount of radiation is used to light and heat a larger piece of the surface of the earth, than it would at the equator. Therefore the temperature in higher geographical latitudes is lower than the temperature near to the equator.

If the axis of the earth had been straight up, compared to the trajectory of the earth, the story would have been different. However the axis is not straight up, it is sloped, which causes the months June and July to be more turned to the sun on the Northern Hemisphere. The days here

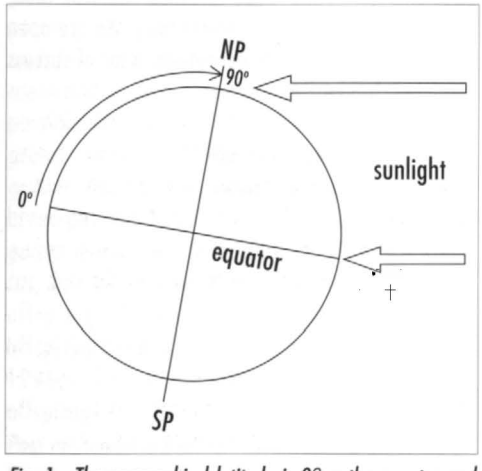


Fig. 1. The geographical latitude is 0°on the equator and 90° on the poles. The further from the equator, the lower the angle of attack of the sunrays.

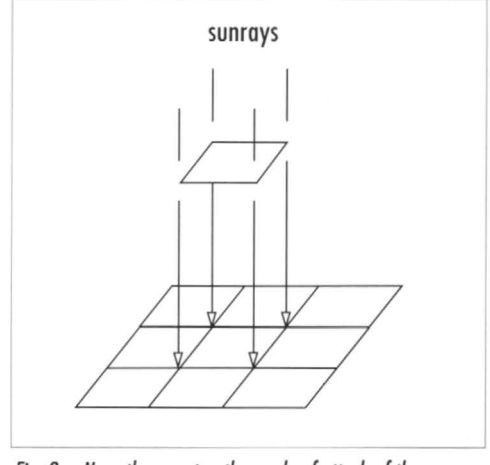


Fig. 2a. Near the equator, the angle of attack of the sunrays is high. The radiation is used to light and heat a small piece of surface on the earth.

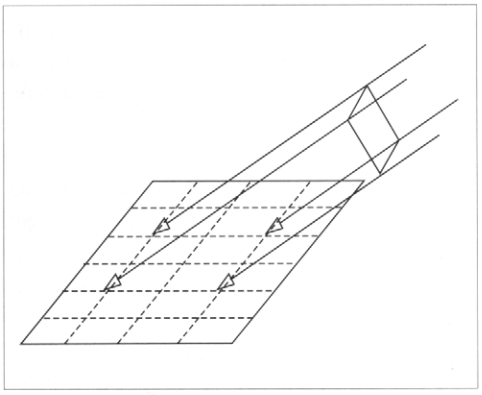


Fig. 2b. The further from the equator, the lower the angle of attack of the sunrays. The same amount of radiation is used to light and heat a bigger piece of surface of the earth.

are longer and the sun comes higher above the horizon. Therefore there is more radiation available for heating the surface of the earth and the air temperatures will be higher. This is called summer. The Southern Hemisphere is not in such a happy state right now. This part is turned away from the sun, the days are shorter and the angle of attack of the sunlight is lower. In short, June is winter in this part of the world. In December/January this is the place to be and the Northern Hemisphere is not.

Those living at the equator always have the advantage. The day length varies little, the same goes for the way the sunlight penetrates the atmosphere. Here we have very little variation in temperature. This is the place where we find lots of reptiles.

For the areas around the poles, the situation is completely different. The variation in temperature and day length is enormous. This is not the place to be, for reptiles and the like. You will hardly ever find them within the arctic circle.

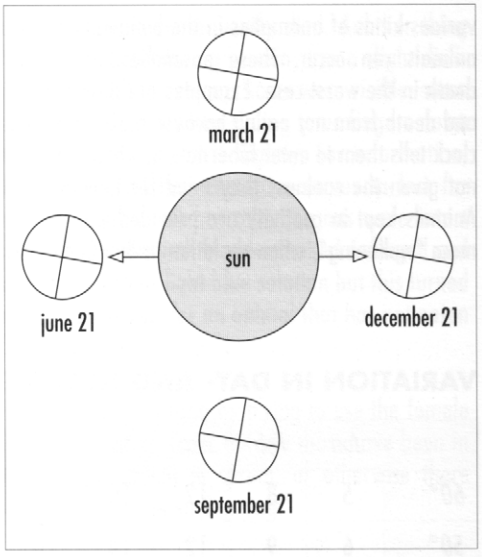


Fig.3. On june 21 the Northern Hemisphere is turned to the sun and receives sunrays in a high angle. It is summer in Europe. On december 21 the opposite situation occurs when the Southern Hemisphere receives much more energy then the Northern Hemnisphere.

SUMMARY

To summarise all of this: depending on the distance of the "place" to the equator, there will be more or less variation in day length and to the amount of radiation that hits the surface of the earth in this place. This variation makes for the seasons, which differ more if the distance to the equator is larger.

Animals (and plants) which occur in the different places of the earth have adapted to this. They have adapted so strongly, that artificially changing the seasons is a very important condition for their well being. It influences their hormones and so it influences their reproduction and their metabolism. When the seasons are not created in captivity,

various kinds of anomalies in the behaviour of the animals can occur. These anomalies can cause death in the worst case. Examples are dehydration and death from not eating because their biological clock tells them to enter hibernation, when they are not given the coolness they need for hibernation. Animals kept in captivity are provided with maximum "wellbeing", when variation in day and night length is provided, which mimics their natural environment. Also the light intensity should differ with the seasons. So in summer the light should not only be provided for longer but should also be brighter.

To complement this story about theory, below you can find how much the variation in day and night lengths should be.

VARIATION IN DAY- AND NIGHTLENGTH PER DEGREE OF LATITUDE

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
60°	5	8	12	15	18	21	18	15	12	8	5	3
50°	6	9	12	14	16	18	16	14	12	9	6	5
40°	8	10	12	13	15	16	15	13	12	10	8	7
30°	9	10	12	12	13	14	13	12	12	10	9	9
20°	10	11	12	12	13	13	13	12	12	11	10	10
10°	11	12	12	12	13	13	13	12	12	12	11	11
0°	12	12	12	12	12	12	12	12	12	12	12	12
10°	13	12	12	12	11	11	11	12	12	12	13	13
20°	14	13	12	12	11	11	11	12	12	13	14	14
30°	15	14	12	12	11	10	11	12	12	14	15	15
40°	16	14	12	11	9	8	9	11	12	14	16	17
50°	18	15	12	10	8	6	8	10	12	15	18	19
60°	19	16	12	9	6	3	6	9	12	16	19	21

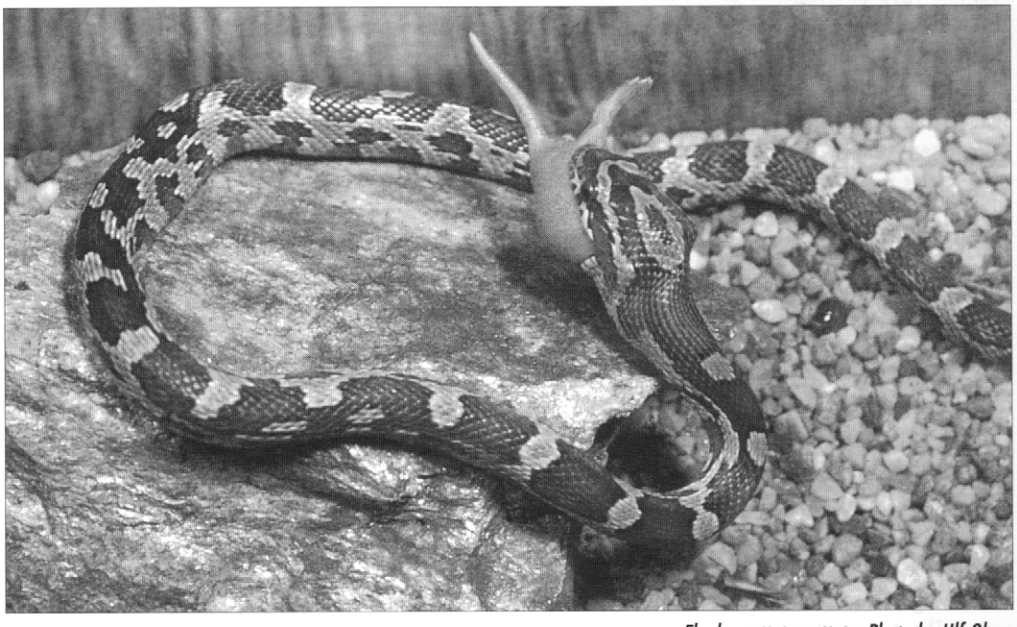
Tabel: The equator is shown on the 0° row. The upper half is the Northern Hemisphere; the lower half is the Southern Hemisphere. The degrees latitude are shown in the first column. The numbers in the other columns show the average amount of daylight per month for each latitude. An example: the average amount of daylight in The Netherlands (± 52°NB) in November is 6 hours.

The middle is the equator, top half is the northern hemisphere and the lower part is the southern hemisphere. The numbers in the columns give the average hours of daylight at that position in that month. Example: the hours of daylight in the Netherlands (52degrees NB) in November is 6 hours.

EXAMPLE

Another example to clarify all this: say we buy a pair of *Elaphe guttata guttata* (Miami phase). These snakes are from Florida (USA). Florida is in the northern hemisphere at 28 degrees. The table (30 degrees) shows us the shortest days (winter) are in November-January (9 hours). The longest days are in June (summer, 14 hours). This gives us a clear indication how long we should provide light for the snakes, in these periods of the year.

Translation by Harmen Jan Platvoet
Corrections by Mark Wootten



Elaphe guttata guttata. Photo by Ulf Olsen