Professor S Afanasiev's Nanocycles Method

by Ray Tomes

Russian translation by Michael Taler

A new method of dating geological deposits has been devised by Professor S Afanasiev and described in his 1991 book "Nanocycles Method". The book is in Russian which the author cannot read, but with text translation help from Michael Taler, the tables largely explain themselves to someone who knows about the moons orbital parameters.

This article is not intended to be a complete translation or review of the book, but only to deal with matters relating to the dating of geological deposits. There is considerable extra material in the book, although this may be seen as the central theme.

The lunar node cycle, which is presently 18.6 years, affects the rainfall on a 9.3 year cycle and this shows up as varying thickness layers of deposits, or varves, in geological formations. However the moon's orbit is gradually getting larger over time and so its period is slowing down. The rate of movement of the nodes is also decelerating and Prof Afanasiev has determined the accurate nodal cycle period for the whole of the last 600 million years.

The cycle of the lunar node is important in affecting the weather because it plays a part in determining tides in the atmosphere, oceans and solid body of the earth. The atmospheric tides affect rainfall which in turn affects river flows and hence the deposition of geological varves, or annual deposits in geological layers.

The plane of the moon's orbit is tilted about 5 degrees with respect to the earth's equatorial axis which in turn is tilted by around 23 degrees to the plane of the earth's orbit around the sun. None of these planes remains stationary, so this results in a merry little dance with the plane of the moon's orbit rotating most rapidly about earth's equatorial axis. The places where the plane of the moon's orbit crosses the plane of the earth's orbit are called the nodes. There is an ascending node when the moon is moving northward and a descending node when it is moving southward.

Whenever the moon, earth and sun are in a straight line it is possible to have eclipses. This can only happen at full moon for lunar eclipses and new moon for solar eclipses. But it does not happen every full and new moon, because sometimes the moon passes above or below the direct line between the sun and earth. When either node of the moon's orbit is at or near the direction between the earth and sun then it is possible to have eclipses.

Eclipses are not important in the nanocycles method, however at the same time as eclipses occur, the tidal pull of the sun and moon are fully combined to make the very strongest tides. At other times the moon may pass up to 5 degrees above or below the line connecting the earth and sun and the tidal range is not so extreme. These spring tides as they are often called can happen at any time of the year and at present come at an interval of a little under 6 months.

There are other factors that affect the strength of tides also, such as whether the moon is at its closest point to the earth when full or new moon occurs and whether the earth is at its closest point to the sun. The whole situation is quite complex and is intended to be the subject of an article in its own right in a future issue of CRJ.

Because the period of the nodal cycle is gradually changing over time, finding that period in geological deposits allows the date of the deposit to be determined moderately accurately, depending on the number of varves in the sample. The Nanocycles Method goes further than this however, it looks at the interaction effects between the nodal cycle period and the year. This requires some further explanation.

At the present time, with a nodal cycle of 9.3 years, successive nodal cycles begin 0.3 years later in the seasons each cycle. Therefore after 3 or 4 cycles the nodal cycle start return to the same time of year again. The average period of the cycle when the nodal cycle comes at the same time of year is 9.3/0.3 or 31 years. Specific occurrences [Note: this term *specific occurrences* was first used in the author's paper "Towards a Unified Theory of Cycles" at the Foundation for the Study of Cycles Conference in 1990 and means common exact cycles intervals as distinguished from long term cycles periods] of nearly the same season, within 0.1 year, will occur after 28, 65 and 93 years and so on.

The seasonal interaction is very important, because sometimes heavy rainfall happens in only a few months of the year and the node being at just the right configuration at that time may an important factor.

The 9.3 year nodal period is the present situation, but when the nodal cycle was only slightly shorter at 9.2 years, the seasonal interaction was then 9.2/0.2 or 46 years. So changing the nodal cycle period by just 0.1 year changed the seasonal interaction period by 15 years. Therefore the seasonal interaction period is a very sensitive indicator of the nodal period and therefore age of the geological deposit.

But Prof Afanasiev obviously asked “Why stop there?” because he looked at further levels of interaction with the seasons. Some of these cycles may be hundreds or even thousands of years long, but provided the deposit is extensive enough, such cycles may be identified.

The **Nanocycles Method** then consists of identifying all the cycles in a geological deposit and then looking for that combination in Professor Afanasiev's table which has a listing for each 0.2 million years for the last 600 million years. However interpolation is possible so that accuracy of dating is only limited by the length of the deposit.

The thought occurred to me that perhaps all the geological deposits of any region of the world may be linked up in a grand scheme in the same way that overlapping tree ring patterns are linked in dendrochronology thus allowing dating right down to the year! This thought has obviously occurred to others also and is known as incremental dating.

There has been a great deal of discussion concerning the 650 to 700 million year old Elatina deposits reported by George Williams in which he found a 12.077 year cycle with modulations of 314 and 157 years. It also shows cycles alternating in strength which is an important clue. Debate has occurred about whether this is an ancient record of the sunspot cycle or a seasonal variation with monthly varves. A third possibility is that these cycles are just the ones described by Prof Afanasiev and that a very accurate dating is possible.

Using the nanocycles method, the Elatina formations can be dated to 658.28 million years ago. Confirmation is strong that the nanocycles identification is correct, because a 12.077 year period is expected to produce a further period of 12.077/0.077 = 157 years, exactly matching one of the reported longer cycles.

Because the lunar nodal cycle found in geological deposits is actually half of the full cycle, alternate cycles represent the ascending and descending nodes. This combines with the other orbital factors such as the closeness of the three relevant bodies in space to make alternate cycles different and leads to alternate cycles being stronger and weaker. This is an additional confirmation that the Elatina formation cycles could be caused by the lunar nodal period, although a similar thing does often happen with the sunspot cycle, so that can be understood as a confusing factor.

It seems that this method is unknown in the west and that it would be well worthwhile to have the book translated into English. If there is a sponsor for this work then the Cycles Research Institute would be pleased to investigate making arrangements for translation and publishing.