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Cancer erosion in Australian human society: 1982 – 2006

1. Summary

The previous study [1] on age dependence of relative incidence rate (IR) for all cancers between male (MP) and female (FP) populations is resumed in more details for Australian human society (AHS) on the period 1982 – 2006. The following main conclusions resulted and exposed in the above defined terms:

(i) AHS shows a clear transition in the period of 1987 – 1993.This transition, already detected in a previous study by sigmoidal model [2], is characterized by:
(ii) increasing of prostate cancer contribution with a maximum in 1994;
(iii) the erosion process of AHS shows at first stage (1987-1989) an increase of its amplitude (Ctr) and coupling strength (CS) and a decrease of kinetic entity (ctr), followed by a dramatic reverse variations of these parameters (1989-1993) similar to separation processes observed in ageing materials;
(iv) the average value of the ratio between maximum amplitude of prostate and breast cancer in this erosion process has the highest value (2.40 ± 0.4) among the all regions studied where the global tendency is to the golden ratio (1.618…);

2. Statistical data and their retrieval

Statistical data considered in the present study for all cancers in Australia on the period 1982 – 2006 [3] were already described and retrieved by sigmoidal and Universal representations in a previous study [2]. These data consist in specific age of IR reported annually for MP and FP. The relative IR between MP and FP defined as

$$R(t) = IR(MP) / IR(FP) \qquad (1)$$

where t = age in age years (ay) has a general form as in Figure 1 where five important age points were defined as [1]:

$$ti: \quad te1, to1, te2, to2, te3 \qquad (2)$$

and can be calculated from the analytical function (shown on Figure 1) describing this dependence with correlation coefficients >0.99. In the previous study R(t) was considered for 8 regions in the world, including Australia, but averaged for each age over different calendar periods. In the present study the

series of ti age points are calculated for each calendar year in the period of 1982-2006 for Australia.
Each age point was associated to a specific cancer development as in Table 1 where the average values on all the 8 regions are given (Figure 1).

Table 1.

i	ti , ay	type and stage of cancer
1	8.9±0.8	maximum rate of blood (especially lymphoma) & brain cancers in MP
2	22.7±1.6	onset of breast cancer in FP
3	39.1±1.3	maximum rate of breast cancer in FP
4	57.5±3	onset of prostate cancer in MP
5	77.7±4	maximum rate of prostate cancer in MP

This sequence of cancers developed in human society can be considered as overall erosion process described perfectly by the Universal representation:

$$U(i, ti): \qquad \ln(ti) = N * \ln(i) + M \qquad (3)$$

where M ~ -ln Ctr, -M/N ~ -ln ctr and -N^2/M ~ -CS according to the general topoenergetic principles previously reviewed [1, 4]. All (N, M) values are calculated by non-linear regression with correlation coefficients ≥ 0.9(7).

3. Results

Figures 2 – 4 show the first phylogeny of the basic topoenergetic quantities M, -M/N and –N^2/M as determined by non-linear regression for each calendar year.
Figures 5 – 7 show dependences of these quantities on the calendar year.
It is clear again that in the period of 1987 – 1993 an AHS transition occurs in two stages corresponding to the social changes at global level inducing an economic crisis in Australia [2]:

a. the erosion process of AHS shows first (1987-1989) an increase of its amplitude and coupling strength and a decrease of kinetic entity,
b. followed by a dramatic reverse variations of these parameters (1989-1993).

In view to better understand these phenomena, it is important to consider the amplitude of processes te2 and te3 driven by breast cancer (C50) and prostate cancer (C61), respectively. Their amplitudes can be estimated by peak values relative to the line R(t) = 1 (see Figure 1 and [1]) as:

$$r2 = 1 - R(te2) \quad \text{and} \quad r3 = R(te3) - 1 \qquad (4).$$

Figure 8 presents the dependence of these values on calendar year, so that r3 (C61) shows a clear increase in the period of 1991 – 1995, while r2 (C50) remains practically constant. These variations as AHS changes can be compared with the separate variations of sigmoidal values calculated from IR(t) for all cancers in MP and FP showing the same two stage AHS change (Figures 3 – 5 in ref. [2]).

After this transition period the amplitude (Ctr) and the coupling strength (CS) of the erosion process decrease, but the kinetic entity (ctr) increases. This means that the groups of people involved in cancer development increases, while their number and their CS to the people not involved in this process (the inert part of the AHS, Cin) are decreasing. This erosion process appears as a separation process generally observed in ageing of materials based on structuring processes in amorphous phase. Typical examples thoroughly studied are ductile-to-brittle transition in amorphous materials [5], defect precipitation in local amorphous domains [6] and crystallization in undercooled solid state [7]. All these processes are thermally driven by annealing at temperatures over the glass transition as threshold temperature. Their polarity is negative in Arrhenius representation because the inert thermal flow is endothermal while the transforming one is exothermal as structuring effect. A similar structuring process was proposed recently for electrical conductivity in NTC-thermistors [8]. Also, a prior stage with reverse effect can be detected in these processes, for instance by accurate dimensional measurements it can be detected first an increase of volume specimen followed by its shrinkage associated to the structuring process.

The problem is the origin of this separation process in AHS. We can observe that after the fall of the iron curtain (1988), the segregation of communist block followed by several important states (Soviet Union and Yugoslavia) begun. As we already commented [2], this process has deeply perturbed all human society. However, family and ethnic groups became stronger in view to protect their interest. In such human groups the mentality of individuals in respect to their lifestyle is formed. Cancer and diabetes have a pronounced family history. For instance breast cancer at women (C50) appears as a family heritage and also as clusters in women collectivities involved in strong (professional) competition. Breast cancer triggers prostate cancer at long distance, not in the same family or working team, with an amplifying factor which tends at global level to the golden ratio (1.618…) [1, 2].

Figure 9 shows the variation of the ratio r3/r2 on the calendar period considered. Its average value is the greatest for AHS (2.40 ± 0.4) from the all regions studied up to now followed by Japan (2.07) [1].

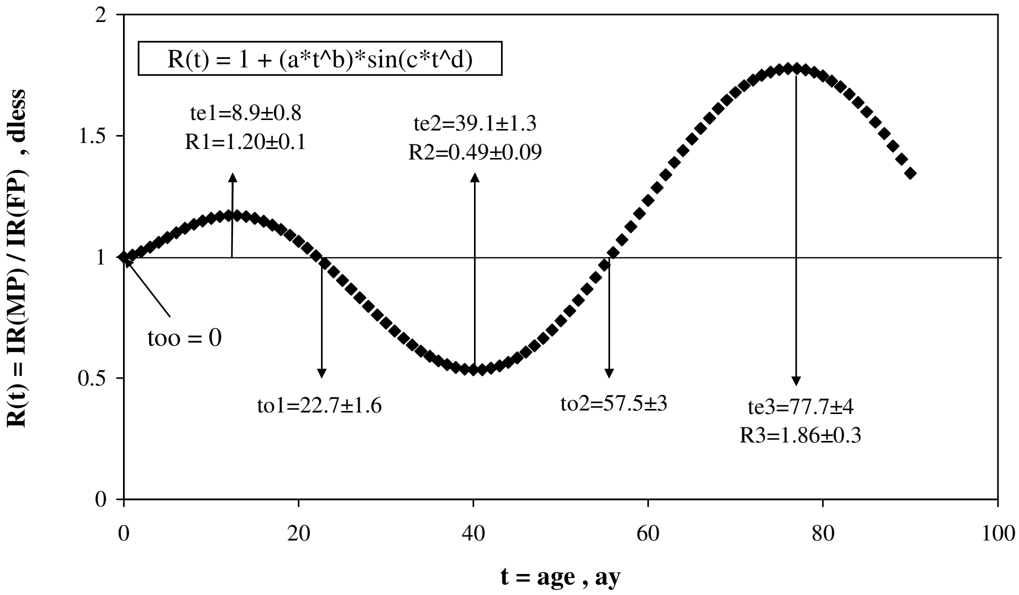

Figure 1.

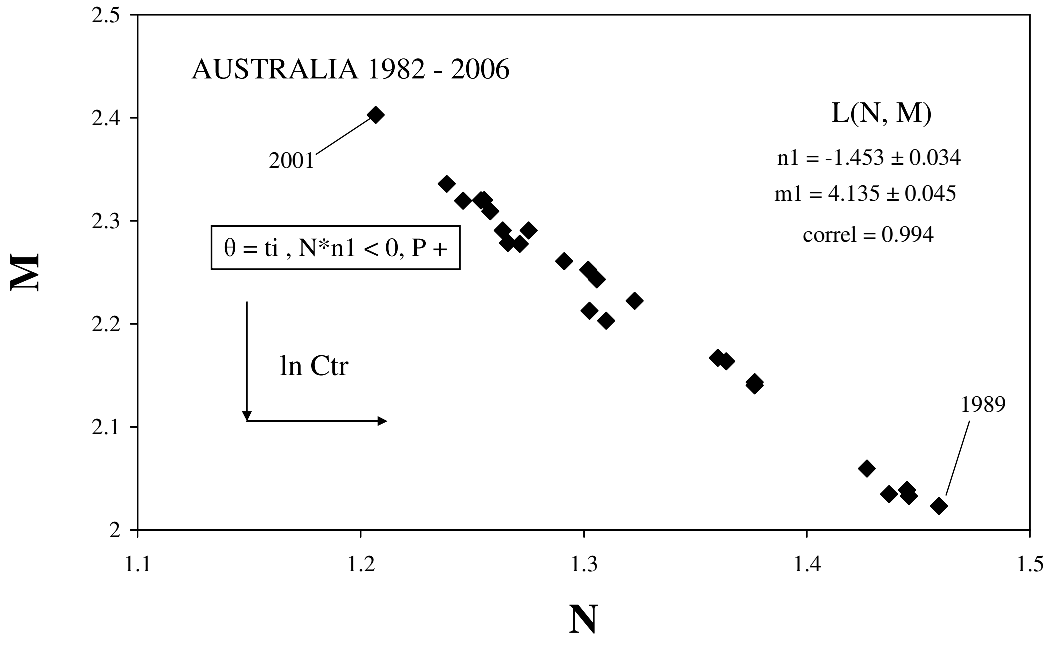

Figure 2.

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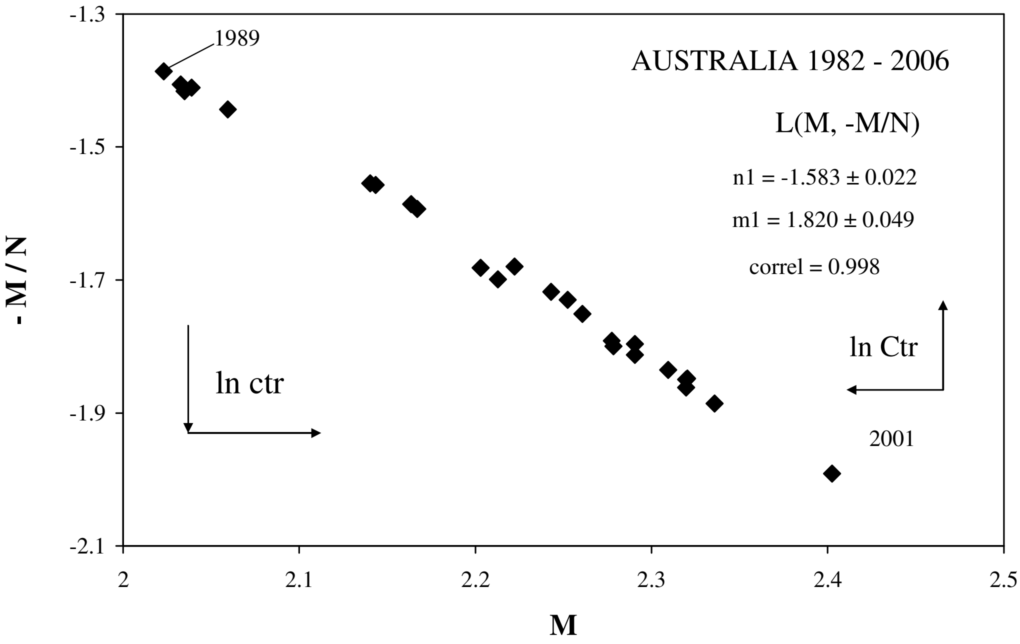

Figure 3.

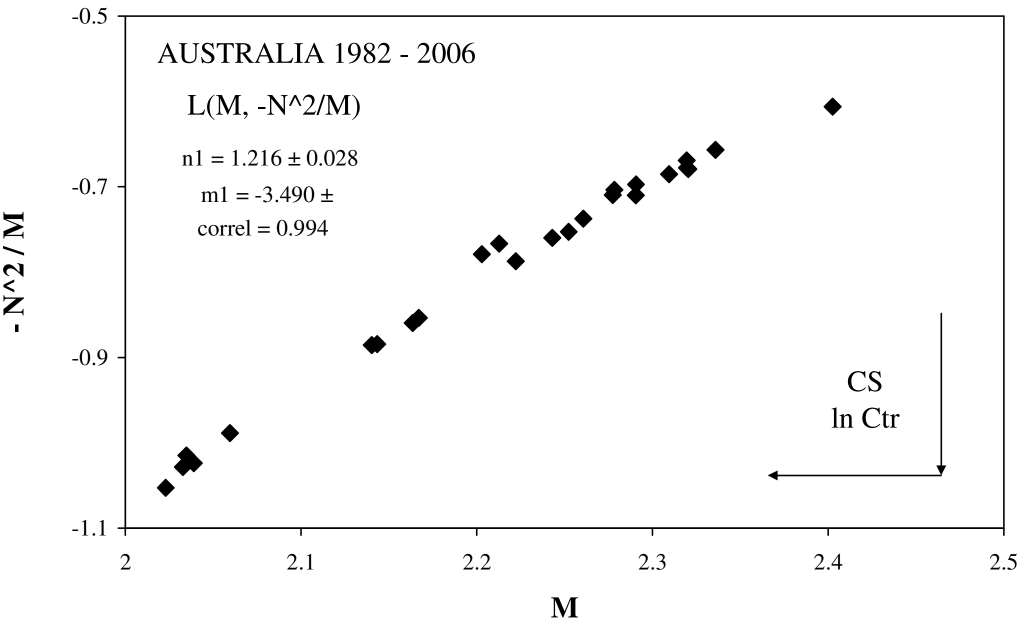

Figure 4.

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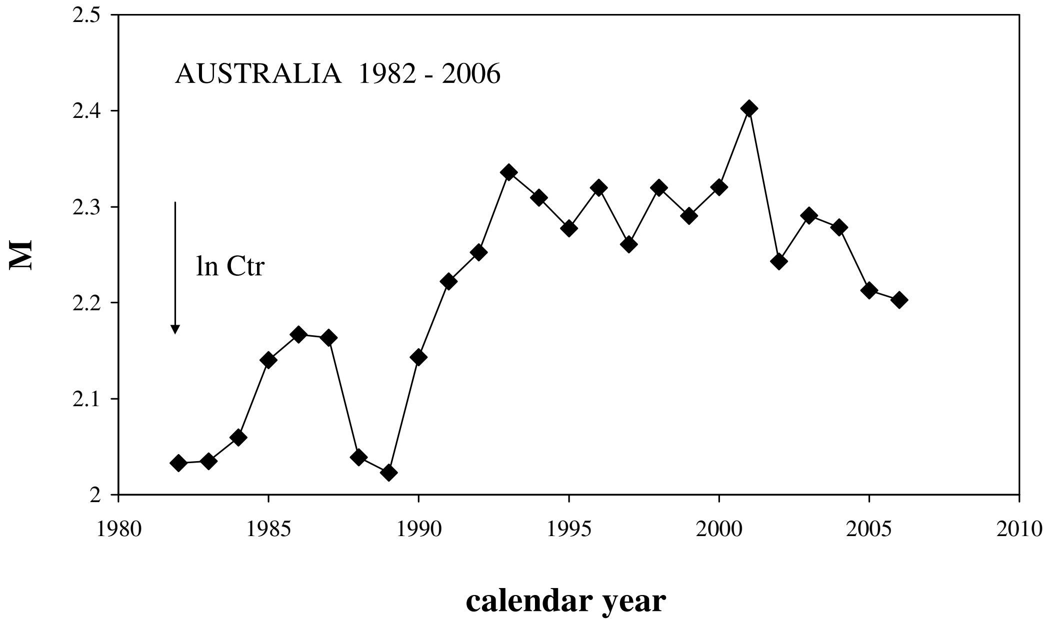

Figure 5.

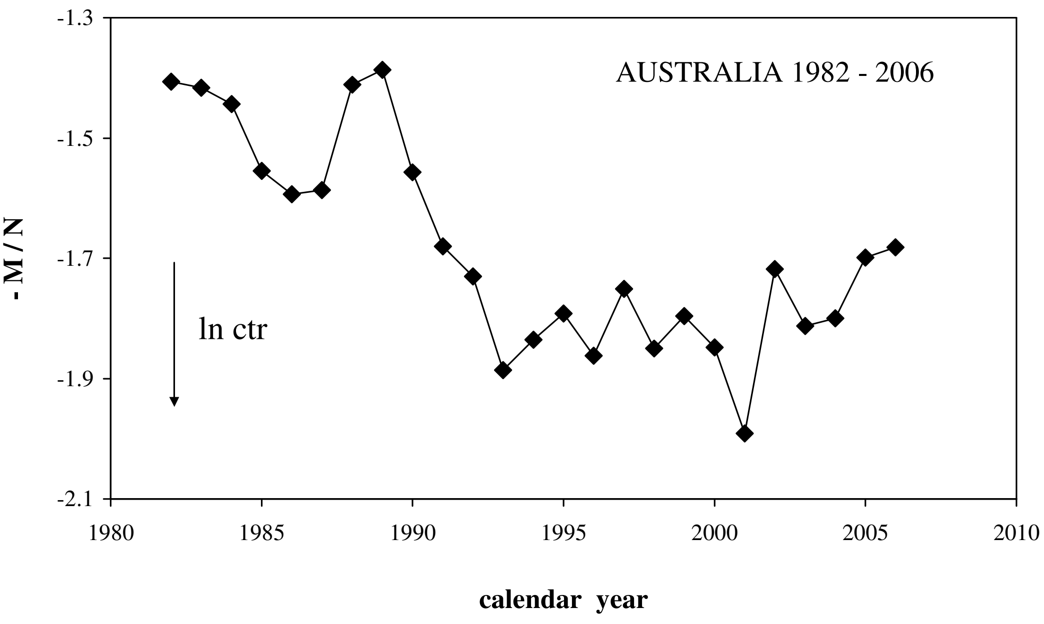

Figure 6.

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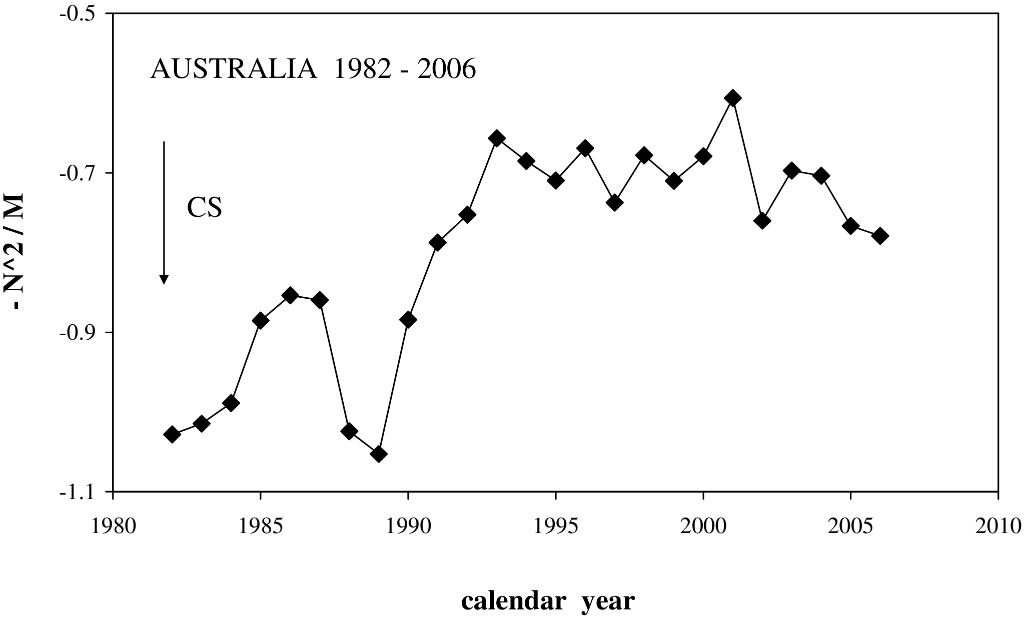

Figure 7.

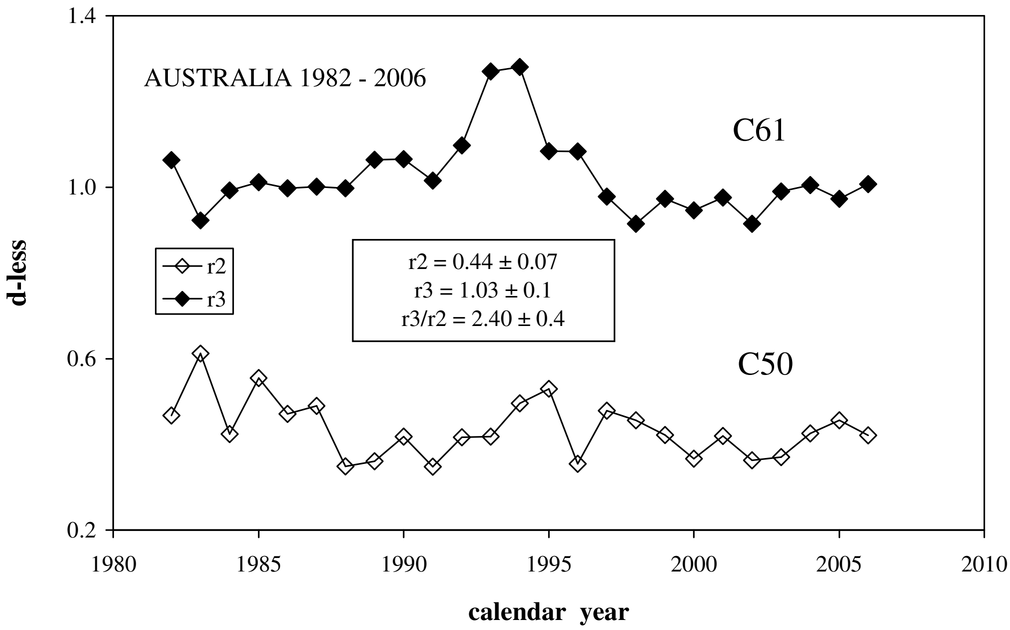

Figure 8.

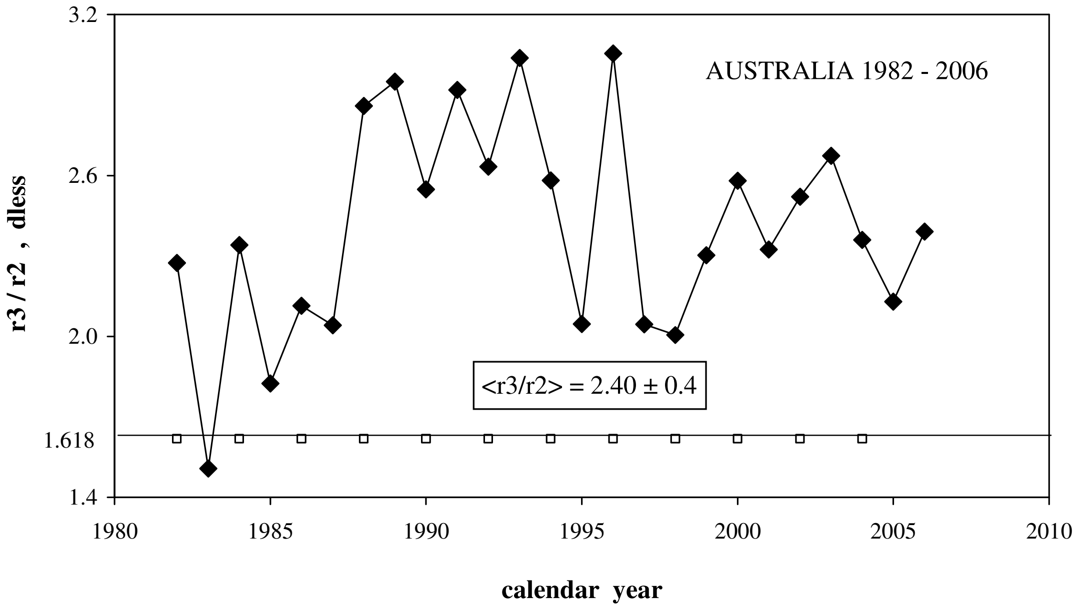

Figure 9.

4. References

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1997	1	2	Guide of good practice in metrology (Romanian)	AFI
1998	2	1	Editorial: socio-psychological implications in creation and utilization of a databank (Ioan-Bradu Iamandescu); Behavior in vapor-liquid equilibria (VLE): I. Structural aspects; Behavior in vapor-liquid equilibria: II. Several structures in databanks; Symposium on VDC-4 held on 30 October 1997 at Lubrifin-SA, Brasov (Romania).	F
1998	2	2	Practical course of metrology (Romanian)	AFI
1998	2	3	DIFFUTOR-01: Thermally driven diffusion in pure metals	AFI
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2000	4	2	Measurement and Calibration.	AFI
2001	5	1	Editorial: Metrology ensures moral and technological progress. Topoenergetic aspects of amorphous-crystalline coupling. I. Composite behavior of water and aqueous solutions (paper presented at nanotubes and Nanostructures 2001, LNF, Frascati, Rome Italy, 17-27 October 2001). Events: Nanotubes and nanostructures 2000.School and workshop, 24 September – 4 October 2000, Cagliari, Italy.	F
2001	5	2	Editorial: Viscosity – a symptomatic problem of actual metrology. Visco-Dens Calorimeter: general features on density and viscosity measurements. New vision on the calibration of thermometers: ISOCALT® MOSATOR: Topoenergetic databanks on molten salts properties driven by temperature and composition.	F

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2002	6	2	Editorial: HuPoTest - Operator calibration or temporal scale psychic test. MOSATOR: topoenergetic databanks of one component molten salts; thermally driven viscosity and electrical conductance.	F
2002	6	3	Editorial: Quo vadis Earth experiment? ISOCALT® : Report on metrological tests	F
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2004	8	2	Aspects of correct measurements of temperature. I. measurement of a fixed point according to ITS-90. Physics and Homoeopathy: some physical requirements for homoeopathic practice.(Plenary lecture at the 19th SRH National Congress, 21-22 September 2004, Bucharest, Romania)	F
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2005	9	2	A new technique for temperature measurement and calibration. National Society of Measurements (NSM). Important warning for T-calibrator users: MSA has chose metrology well calibrators from Fluke (Hart Scientific).	F
2005	9	3	Universal representation of Cancer Diseases. 1. First sight on NSW-2003 report. Universal representation of Cancer Diseases. 2. UK cancer registrations on 1999-2002. Vital Potential can estimate our predisposition for cancer diseases.	F
2006	10	1	NTC – thermistors -1	AFI
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2010	14	4	Cancer as an erosion process in human society	F

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