

# SUBCOMMISSION ON CRETACEOUS STRATIGRAPHY

ANNUAL REPORT 2010

## 1. TITLE OF CONSTITUENT BODY and NAME OF REPORTER

International Subcommittee on Cretaceous Stratigraphy (SCS)

### *SUBMITTED BY*

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## 2. OVERALL OBJECTIVES, AND FIT WITHIN IUGS SCIENCE POLICY

- *To facilitate international communication in all aspects of Cretaceous stratigraphy and correlation*
- *To establish a standard global stratigraphic subdivision and nomenclature for the Cretaceous, as part of the ICS standard global stratigraphic scale;*
- *To produce a stratigraphic table displaying agreed subdivision to substage level and intervals of disagreement, marking boundaries that are defined by a GSSP.*

## 3. ORGANIZATION

SCS is a Subcommittee of the International Commission on Stratigraphy.

*Membership:* Chair: Prof. Isabella Premoli Silva, Italy  
Vice Chair: Dr. Irek Walaszczyk, Poland  
Secretary: Dr. Silvia Gardin, France

In addition, there are 16 Voting Members of the Subcommittee, from all the continents. Over 130 Cretaceous scientists from all over the world and in many different disciplines belong to one or more of the 9 Stage Working Groups of the SCS still active, or to the Kilian Group. All WG members are treated as Corresponding Members of the Subcommittee. Effectively, anyone with interest and expertise that can contribute to our objectives is welcome to do so. ***The great bulk of the Subcommittee's work is carried out by these Working Groups.***

### **3a. Officers for 2008-2012:**

Chair:	Prof. Isabella Premoli Silva (Milan, Italy)
Vice-Chair:	Dr. Irek Walaszczyk (Warsaw, Poland)
Secretary:	Dr. Silvia Gardin (Paris, France)

*For technical reason the WEB site for the Subcommission had to migrate to the site of The Museum of Natural History in Paris. The new web site is now in preparation.*

## **4. INTERFACES WITH OTHER INTERNATIONAL PROJECTS**

The Subcommission has liaised with successive meetings of the *International Cretaceous Symposium*, which until 2004 have been promoted by the German *Subkommission für Kreide-Stratigraphie*. The SCS has now taken over the responsibility for selection of future venues, though the successful applicants will organize individual congresses. At the *8th International Symposium on Cretaceous System*, held in Plymouth in September 2009, it was decided that the *9th International Symposium on Cretaceous System* will be convened in 2013 at Ankara, Turkey. The Symposium is now scheduled for September 2013 and will be hosted by the Middle East Technical University in Ankara. For up-dated informations visit the WebSite <http://www.cretaceous2013.org/en/>. Contact Person: Ass. Prof. Dr. Ismail Omer Yilmaz <ioyilmaz@metu.edu.tr>.

The Subcommission also liaises closely with the Subcommission on Jurassic Stratigraphy, especially over the definition of the Jurassic/Cretaceous boundary.

When appropriate, the Subcommission liaises also with IGCP projects. In particular, a strong liason was established by our colleagues from IGCP 507 – “Cretaceous paleoclimatology”, and IGCP Project 506 - Marine and Non-marine Jurassic: Global correlation and major geological events (Project Co-Leader W. Wimbledon).

ICS has always been directly or indirectly linked to important international Projects as IODP, IGCP, and CHRONOS (Mesozoic Planktonic Foraminifera Working Group, MPFWG).

## **5. CHIEF ACCOMPLISHMENTS AND PRODUCTS IN 2010**

### General Activities

A wealth of data on various aspects of Cretaceous stratigraphy had continued to be published in 2010 providing a continuous amelioration of the multiple stratigraphic framework that today spans the whole Cretaceous in high to frequently very high resolution.

Increasing knowledge on carbon isotope stratigraphic patterns and magnetostratigraphy from continuous pelagic successions, especially deep-sea, through the Cretaceous, provoked an increase of interest in the scientific community for a more traditional stratigraphic aspects.

In 2010 this resulted in an increase of activities among the ammonite specialists as well as on other fossil groups and other proxy tools. In particular, the French and Spanish communities have been very active in revising ammonite taxonomy and stratigraphic distribution of key taxa; and field trips to solve specific topics have been organized visiting some key sections (i.e. Albian, Berriasian type-area, etc.). In addition, the Berriasian Working Group called two official meetings

(Slovakia and Paris) and its chairperson (Wimbledon) with the collaboration of WG members prepared an exhaustive report (in press) of the activities up to the 2009 Plymouth meeting.

Wimbledon W.A.P., C.E. Casellato, D. Reháková, L. G. Bulot, E. Erba, S. Gardin, R.M.C.H. Verreussel, D.K. Munsterman, C.O. Hunt, in press. Fixing a basal Berriasian and Jurassic/Cretaceous (J/K) boundary – is there perhaps some light at the end of the tunnel?  
Rivista Italiana di Paleontologia e Stratigrafia

Of general interest:

B. Vincent, F. S.P. van Buchem, L. G. Bulot, A. Immenhauser, M. Caron, D. Baghbani & A. Y. Huc, 2010. Carbon-isotope stratigraphy, biostratigraphy and organic matter distribution in the Aptian – Lower Albian successions of southwest Iran (Dariyan and Kazhdumi formations). *GeoArabia Special Publication* 4, v. 1, p. 139-197.

### **The Kilian Group (Lower Cretaceous Ammonite Working Group).**

The Kilian Group (Lower Cretaceous Ammonite Working Group) had the 4<sup>th</sup> meeting on 30 August 2010, that took place before the “8<sup>o</sup> International Symposium on Cephalopods Present and Past” (September 1-3, 2010), both held at the University of Burgundy in Dijon (France).

According to the draft report, prepared by Reboulet (chair), Rawson and Moreno-Bedmar (reporters), the workshop was attended by 14 members from 9 countries. At the beginning of the meeting the chairman summarized briefly the decisions taken at the previous Kilian’s meetings and presented some proposals on the standard zonation received by some colleagues who could not attend. His presentation and that by Moreno-Bedmar were used as a basis for discussion which focused on the Aptian and Albian zonal schemes. Several amendments and new subzones were introduced to both Aptian and Albian schemes.

Aptian: The discussion focused on the base of the stage and its subdivision. In terms of ammonites, the base of the Aptian is marked by the first appearance of *Prodeshayesites* (= base of *Prodeshayesites fissicostatus* Zone) in NW Europe and by the first appearance of *Deshayesites* (= base of *Deshayesites oglanlensis* Zone) in the Mediterranean area. According to several authors the *D. fissicostatus* Zone should be correlated with the *D. tuarkyricus* Zone (= *D. oglanlensis* Zone). An agreement was also reached in considering *Prodeshayesites* a synonym of *Deshayesites*. About the subdivision, the meeting adopted a two-fold division of the Aptian stage for the Mediterranean area with a boundary between the *Dufrenoyia furcata* and *Epicheloniceras martini* Zones, that agrees with the two-fold division of the NW European scheme. This boundary can be identified on a large scale on the basis of an important change in the ammonite fauna recorded in Tethyan (from Transcaspian to Caribbean areas) and sub-boreal realms. Moreover, the two-fold subdivision has also the advantage to overcome the uncertainties in correlating the French substages Bedoulian, Gargasian and **Clasayesian** to the Lower, Middle and Upper Aptian, respectively, as some disagreements exist in defining the Gargasian. The WG concluded that it would be preferable to abandon the terms Bedoulian, Gargasian, **Clasayesian** as they are not recognized internationally, but mainly used in France. In addition, their type sections do not offer good perspectives (low number and/or bad preservation of ammonoids) and they are not well exposed, being partly or completely inaccessible because of urbanization.

Albian: For the time being the *Leymeriella (Leymeriella) tardefurcata* Zone, based on the first appearance of the index-species (not by *L. (P.) schrammeni*, a strongly provincial and geographically limited taxon), is still regarded as the first zone of the Albian. However, the base Albian will fall

within the *Leymeriella* series that is affected by taxonomical problems related to the genus it self and to its subgenera *Proleymeriella*, *Leymeriella* and *Neoleymeriella*. A new definition for the *Leymeriella (Leymeriella) tardefurcata* Zone was proposed without reaching the consensus. The full report with the new zonal scheme has been submitted in December 2010 for publication on Cretaceous Research. The Web Site of the Kilian Group is in preparation.

The Kilian Group plans to have the next meeting in September 2013 at the 9<sup>th</sup> International Symposium on the Cretaceous System in Ankara (Turkey). For the new meeting the Kilian Group is expected to focus on the Berriasian, Valanginian and Hauterivian stages and to calibrate different ammonite zonations of the Tethyan, Boreal and Austral realms with the “standard”, which is in fact the zonation for the Mediterranean Faunal Province.

### **The Berriasian GSSP and the J/K boundary.**

The Berriasian Working Group had two well-attended WorkShops in 2010. The first one was in Smolenice, Slovakia, 6– 9 April 2010, hosted by Jozef Michalik at the Slovak Academy of Science. The first two days have been dedicated to presentation of new data especially on the Northern Italian sections (Casellato, 2010; Channell et al., 2010) and comparison with other sections, followed by two-days field trip to three important localities, the Hiboda, Strazovce and Brodno sections in western Slovakia. The second meeting was in Paris, 3-5 November 2010, hosted by the University Pierre & Marie Curie and organized by Johann Schnyder, Silvia Gardin and Bruno Galbrun.

At the end of 2009 Wimbledon (WG chair) and Bulot returned to the Berriasian type-area in SE France. They visited few localities and collected ammonites in numbers from all beds at Le Chouet, a section which is more expanded than the Puerto Escano section (Spain) and most likely yields for the first time the overlap between the "Durangites fauna" and the "Berriasella fauna". Consequently, the WG starts to re-consider the Berriasian type area for the J/K GSSP, taking also into account that the Berrias type-section, even with some problems at its base, allows to correlate some biotic events to magnetostratigraphy. These new findings have been presented and discussed at length during the Paris meeting. Mohammed Benzaggah presented a synthesis of calpionellid events from Morocco Rifean sections, that yield also ammonites. His calpionellid taxonomy and event distribution compare well with Rehakova's data especially from Slovakia. Moreover, Wimbledon had field campaigns in Crimea surveying some sections across the J/K boundary and collecting ammonites and samples for micropaleontological investigations. Field work in Crimea will continue in 2011. In addition, new data have been gathered from Tibet and Argentina and studies on the base Berriasian were undertaken in Bulgaria.

The WG agreed to stick to the 6-monthly cycle of meetings, to keep up progress. The next planned meeting will be in Tunisia and the Russian Cretaceous Commission (Baraboshkin) have been asked if they could host a subsequent meeting at or near to Kashpir on the Volga region.

Casellato C.E., 2010. Calcareous nannofossil biostratigraphy of Upper Callovian–Lower Berriasian successions from Southern Alps, North Italy. *Rivista Italiana di Paleontologia e Stratigrafia*, v. 116/3, p. 357-404.

Channell J.E.T., C.E. Casellato, G. Muttoni, E. Erba, 2010. Magnetostratigraphy, nannofossil stratigraphy and apparent polar wander for Adria-Africa in the Jurassic–Cretaceous boundary interval. *Palaeogeography, Palaeoclimatology, Palaeoecology* 293, p. 51–75.

### **Base Valanginian GSSP.**

In the absence of magnetic signals in the Montbrun-les-Bains section, so far the primary candidate for the Valanginian GSSP, and in general in all the southern France successions, scientists from Spain suggest that the alternate sections near Caravaca (SE Spain) should be reconsidered by the WG. The detail synthesis of the biostratigraphic and magnetic events provided by Aguado et al. (2000) shows that the Spanish sections, especially the Caneda Luega, are the only ones in the world where a direct correlation could be made between magnetic chrons and ammonite-nannos-calpionellid zones at this level. Meanwhile, Stephane Reboulet and colleagues are currently gathering new data at Montbrun-les-Bains (S. France) and, in addition, are planning to study with a multidisciplinary approach the Vergol section, which has the advantage to comprise also the base of the upper Valanginian.

The chair of the Valanginian WG, Luc Bulot, and the Spanish colleagues are looking if a WG meeting can be organized at short issue. Bulot is also exploring the possibility of having a field trip in the Caravaca area in Spring 2011 to look at the Caneda Luega-Cehegin sections.

### **Base Hauterivian GSSP.**

At the beginning of October 2010 Luc Bulot (chair of the WG) and I. Premoli Silva (SCS chair) spent a full week in assembling the data available so far on La Charce section (Drome, France), the major candidate for the Hauterivian GSSP. A first draft of the proposal, even incomplete, was prepared that at this stage includes background and lithostratigraphy, ammonite biostratigraphy, belemnites, micropaleontological content (calcareous nannofossils, radiolarians, dinoflagellates, ostracods, benthic foraminifera), isotope stratigraphy, organic and inorganic geochemistry, provided by the various specialists specifically involved in the study or along the years since late XX century. It was noticed that nannofossil data needed to be briefly controlled, whereas for planktonic foraminifera their presence and distribution needed to be checked more carefully. Both fossil groups are now under study and the new data are expected in a month or so. As the Early Cretaceous successions from Southern France did not register the magnetic signals and no magnetic zonation exists for the Boreal Realm, the best tool for correlation at least through the Tethys will result to be  $\delta^{13}\text{C}$  isotope stratigraphy. We are confident to complete the Hauterivian GSSP proposal ready to be voted by mid 2011.

### **Base Barremian GSSP.**

At the moment, there is a lot of investigations going on in France on the Barremian mostly under the "guidance" of Jean Vermeulen. A new section near Barreme is currently under study. The ammonites are far more abundant and much better preserved than in any other sections studied so far in Spain or France. At this stage it should be wise to wait a little bit for the new ammonite datum and plan a study of that section in term of other proxies.

### **Base Aptian GSSP.**

A wealth of data have been collected and published on the Aptian stage in the last few years by our French colleagues on the stratotype sections of Bedoulian and Gargasian substages including revised biostratigraphies,  $\delta^{13}\text{C}$  curve and cyclostratigraphy. Sixteen papers, previously published on-line in Notebooks on Geology, have been assembled by Moullade et al. in volume 24/1 (2009) of Annales du Muséum d'Histoire Naturelle de Nice. Although magnetic signature in the French stratotype sections cannot be detected, carbon isotope data allowed a precise correlation between the base of magnetic chron M0, recommended at the 1995 Brussels Meeting for identifying the base of the Aptian, and the

Aptian basal ammonite *Deshayesites ogranlensis* Zone. The formal proposal of the Aptian GSSP at Gorgo a Cerbara (central Italy) is in preparation by the chair and members of the WG.

Moullade M., Tronchetti G. & Granier B. (eds.), 2009. Ammonites, Microfaunes, Stratonomie et Geochimie de l'Aptien-type. Annales du Muséum d'Histoire Naturelle de Nice, v. XXIV/1, 394 pp., Nice, France.

### **Base Albian GSSP.**

As reported in 2009, the formal proposal for the base Albian at Tartonne (SE France), prepared by J. Kennedy, never reached the quorum. Voting Members against the proposal commented that the change of lithofacies at the critical level (from marl to organic-rich laminated black shale), the regional/provincial distribution of the index-species *Leymeriella (L.) tardefurcata*, and the low stratigraphic value of ancillary markers (few, poorly diagnostic planktonic foraminifera; *Predicosphaera* taxonomic problems, etc.) makes the Tartonne section unsuitable as the base Albian GSSP. In addition, the sampling across the Aptian/Albian boundary was considered at a resolution not adequate for such critical interval and the proposed event (FO of *L. tardefurcata*) is poorly applicable to other sections, especially outside SE France.

In order to increase the possibility of worldwide correlations, in Spring 2010 members of the new Working Group, set up in Plymouth last year (Paul Bown, coordinator), re-sampled at high resolution the Pré-Guittard section near Tartonne. Multidisciplinary analyses of the new sample set are in progress by a number of scientists from various European Universities (i.e. UK, Italy, Switzerland, France).

At STRATI 2010 (Paris, 2-6 September 2010) the base Albian was discussed at length and the French Cretaceous Stratigraphic Commission concluded that for the base Albian the section at Hyèges, nearby Tartonne, should be considered; the French Cretaceous Group is ready to coordinate an integrated stratigraphic work.

Finally, it was suggested that also the Spanish sections of Peracals-Lluca (SE Pyrenees) might be considered. Robert et al. (2001) indicated the Peracals section, rich in Tethyan and cosmopolitan ammonites, as being one of the most complete sections across the Aptian/Albian boundary. Since 2001, lack of fundings and time prevented to go back to the area for extending the study to comprise other proxies.

Robert E., Peybernes B., Bulot L.G., 2001. Caractérisation d'une nouvelle sous-zone d'ammonites au passage Aptien-Albien dans les 'Marnes noires ~ Hypacanthoplites' des Pyrénées espagnoles. GEOBIOS, v. 34/1, p. 53-62.

### **Base Coniacian GSSP.**

The final report on the base of Coniacian is in revision and will be published in volume 60, n. 3 of Acta Geologica Polonica and contemporaneously will be sent to the Subcommittee before the end of 2010. Besides multiple up-dated biostratigraphies, the report also includes the isotope curves for both the Salzgitter-Salder (northern Germany) and Slupia Nadbrze~na (central Poland) sections. It is confirmed that the inoceramid-based lower Coniacian boundary (first appearance of *C. deformis erectus*), slightly post-dates the traditional ammonite (FAD of *Forresteria petrocoriensis*) position of the boundary.

The same issue of Acta Geologica Polonica will contain another article by I. Walaszczyk and members of the Working Group, that deals with the Wagon Mound section (US Western Interior),

another candidate section for the base Coniacian. Their additional studies on macro- and microfossil (calcareous plankton) contents prove that the Wagon Mound section is older than the base of the Coniacian and belongs entirely to the upper Turonian.

- I. Walaszczyk, C. J. Wood, J. A. Lees, D. Peryt, S. Voigt, F. Wiese, 2010. Salzgitter-Salder Quarry (Lower Saxony, Germany) – Slupia Nadbrzena river cliff section (central Poland): a proposed candidate composite Global Boundary Stratotype Section and Point for the Coniacian Stage (Upper Cretaceous). *Acta Geologica Polonica*, v. 60/3, p. 445-477.
- I. Walaszczyk, J.A. Lees, D. Peryt, W.A. Cobban, in revision. Testing the congruence of the microfossil versus microfossil record in the Turonian – Coniacian boundary succession of the Wagon Mound - Springer section (NE New Mexico, USA). *Acta Geologica Polonica*, v. 60/3.

### **Base Santonian GSSP.**

The final proposal for the base Santonian at Olazagutia (Spain), prepared by the chair M. Lamolda, was distributed for approval and/or comments to the Voting Members three times since 2008, and finally reached the quorum of positive votes in 2010. On October 1, 2010 the proposal was returned to the WG chair for an up-date and few corrections. The final GSSP proposal is expected to be submitted to the ICS before the end 2010.

### **Base Campanian GSSP.**

Members of the WG have been searching for a new section across the Santonian/Campanian boundary to be proposed as base Campanian GSSP. So far, the only section not affected by hiatus and/or major dissolution is the Bottaccione section (Gubbio, central Italy), in which the calcareous plankton bioevents are calibrated to magnetostratigraphy and carbon isotope stratigraphy. The main bias of the Bottaccione section is that planktonic foraminifera from the critical interval could not be properly disaggregated from the hard limestones, using cold acetolysis method, and are very poorly preserved.

### **Base Maastrichtian GSSP.**

To overcome the problem of correlation, stable isotopes were measured in high resolution from Tercis les Bains GSSP. Tercis isotope curve will be compared with those from the Vistula River section (Poland) and the magnetostratigraphically calibrated Bottaccione & Contessa sections (Gubbio, central Italy). Sample collection from the latter sections was completed this Fall and isotope analyses carried out by Silke Voigt and collaborators are in progress. Data should be published very soon.

## **6. CHIEF PROBLEMS ENCOUNTERED IN 2010**

The need nowadays for a high-resolution framework to be exportable worldwide resulted in the necessity of re-visiting several candidate sections, already studied paleontologically, by implementing multiple biostratigraphies and stratigraphic tools other than fossils - those are profoundly affected by bioprovincialism in several intervals - like magnetostratigraphy, stable isotope stratigraphy, etc. In several cases, especially in the Late Cretaceous, the integration of multiple bio-, physical stratigraphies revealed that the candidate sections were unsuitable as GSSP. Consequently, new sections had to be searched and studied from the beginning. This resulted in a delay in submitting the

GSSP proposals, taking also into account that scientists from different subdisciplines do not necessarily work at the same speed.

Another problem is the lack of fundings in most countries for carrying out studies strictly stratigraphic, apparently poorly fashionable, for attending workshops and/or conferences.

## **7. SUMMARY OF EXPENDITURES IN 2010 (ANTICIPATED THROUGH MARCH 2011):**

### **I. INCOME**

ICS subvention for 2010 (2000 \$)	Euro 1674.00
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Total income	Euro <b>1674.00</b>

### **II. EXPENDITURE**

Contribution to J/K meeting,, Smolenice 500.00 (organization+lodging)	Euro
Participation to J/K meeting, Smolenice (Chair)	Euro 388.00
Participation to ICS-Prague (part) (chair)	Euro 164.47
3 <sup>st</sup> Contribution to Russian scientists	Euro 500.00
Hauterivian - trip to Marseille, 4-9 Oct. (Chair)	Euro 250.00
Office (chair & secretary) expenses	Euro 150.00
Bank Expenses	Euro 12.00
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Total expenditure	Euro <b>1964.47</b>

## **8. WORK PLAN, CRITICAL MILESTONES, ANTICIPATED RESULTS AND COMMUNICATIONS TO BE ACHIEVED NEXT YEAR (2011):**

### **Membership of Cretaceous Subcommittee.**

The Voting Membership of the Cretaceous Subcommittee have been implemented during 2010.

### **Meetings**

- The 8° meeting of the Berriasian and J/K boundary WG is planned in Tunisia. No specific date is available yet.
- The 9° meeting of the Berriasian and J/K boundary WG hopefully will be in Russia, pending the answer from the Russian Cretaceous Commission.
- Valanginian Workshop and field trip, Caravaca area, Spain, Spring 2011, pending.

### Work Plan and anticipated Results

- To bring recommendations for the remaining GSSPs to ICS as soon as possible.
- Submission of the Santonian GSSP to ICS
- Votes on the Coniacian GSSP and submission to ICS after Subcommittee approval
- Votes on the Hauterivian GSSP and submission to ICS after Subcommittee approval
- Preparation of the first draft on Aptian GSSP
- To complete the new analysis of the Pre-Guittard section for the Albian GSSP
- Definition of criteria for identifying the base of the Berriasian and the J/K boundary
- Choose the appropriate section for the Campanian GSSP

### 9. BUDGET AND ICS COMPONENT FOR 2011

Office expenses (Fax, phone, postage, etc)	Euro	150
Organization expense for the J/K Tunisia Meeting	Euro	500
Support to participants to the J/K Tunisia Meeting	Euro	1000
Support to participants to the Valanginian Workshop, Spain	Euro	1500
Contribution to the fieldtrip at Peracals-Base Albian	Euro	1500
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<b>Total estimated expenditure</b>	<b>Euro</b>	<b>4650</b>

### 10. SUMMARY OF CHIEF ACCOMPLISHMENTS OVER PAST FIVE YEARS (2006-2010)

*See Accomplishments in ICS Annual Reports 2006 to 2010 (above) for additional details.*

- Renewed research by WG members (resulting in a great number of publications, still ongoing), based on research needs pinpointed by the 1995 Brussels, 2005 Neuchâtel, 2008 Oslo and 2009 Plymouth meetings.
- Workshop on the Aptian ammonite zonation, held in Lyon (Nov. 2005) focused the discussion mainly on the ammonite faunal turnovers and the Lower/Middle Aptian (Bedoulian/Gargasian) boundary in relation to the position of the Furcata Zone.
- Set up of the renewed Working Group on the Berriasian GSSP and the J/K boundary, chaired by W.A.W. Wimbledon (Dec. 2006-Spring 2007).
- 2<sup>nd</sup> Workshop of the Kilian Group on the Hauterivian-Barremian zonation, held in Digne-les-Bains (May 2007), from the **Radiatus** (base of the Hauterivian) to the **Sarasini** (top of the Barremian) zones.
- 3<sup>rd</sup> Workshop of the Kilian Group on the Hauterivian and Barremian zonation, held in Vienna (April 2008)
- 1st official meeting of the renewed Working Group on the Berriasian GSSP and the J/K boundary,

- chaired by W.A.W. Wimbledon in Bristol (July 2007).
- 2nd official meeting of the Working Group on the Berriasian GSSP and the J/K boundary, chaired by W.A.W. Wimbledon in Marseille (July 2008).
  - 33° Geological Congress, August 2008, Oslo: SCS Symposium on “Stratigraphic subdivisions of the Cretaceous System: State of the Art”. (Conveners: I. Premoli Silva, F. Surlyk & I. Walaszczyk).
  - 3rd official meeting of the Working Group on the Berriasian GSSP and the J/K boundary, chaired by W.A.W. Wimbledon in Milan (March 2009).
  - 4th official meeting of the Working Group on the Berriasian GSSP and the J/K boundary, chaired by W.A.W. Wimbledon in Plymouth (September 2009).
  - 5th official meeting of the Working Group on the Berriasian GSSP and the J/K boundary, chaired by W.A.W. Wimbledon in Smolenice (Slovakia) (April 2010).
  - 4th Workshop of the Kilian Group on the Hauterivian and Barremian zonation, held in Dijon (August 2010)
  - 6th official meeting of the Working Group on the Berriasian GSSP and the J/K boundary, chaired by W.A.W. Wimbledon in Paris (November 2010).

The Chair and/or Vice Chair represented the SCS at:

1° meeting of the *Berriasian and J/K boundary Working Group*, Bristol (UK), July 2007

2° meeting of the *Berriasian and J/K boundary Working Group*, Marseille, July 2008

SCS Symposium HPS-10 on “Stratigraphic subdivisions of the Cretaceous System: State of the Art”. (Co-conveners: I. Premoli Silva, F. Surlik & I. Walaszczyk), at 33° Geological Congress, August 2008, Oslo:

3° meeting of the *Berriasian and J/K boundary Working Group*, Milan, March 2009

4° meeting of the *Berriasian and J/K boundary Working Group*, Plymouth, September 2009

5° meeting of the *Berriasian and J/K boundary Working Group*, Smolenice, April 2010

ICS Meeting, Prague, May 2010

## **9. OBJECTIVES AND WORK PLAN FOR NEXT 4 YEARS (2011-2014)**

### **Meetings**

- Spring 2011 – the 7th Workshop of the Berriasian and J/K boundary WG is planned in Tunisia
- August 2012 - Subcommission Official Meeting at the 34<sup>th</sup> International Geological Congress, Brisbane, Australia
- September 2013 – 9th International Symposium on Cretaceous System, Middle East Technical University, Ankara, Turkey. Convenor: Ismail Omer Yilmaz
- September 2013 – 4<sup>th</sup> Workshop of the Kilian Group at the 8<sup>th</sup> International Symposium on Cretaceous System, Ankara.

Details of other meetings are not yet available.

### **Objectives**

- To submit the proposal of Santonian GSSP to ICS, and to submit it to Episodes for publication

- To submit the proposal of Coniacian GSSP to ICS, and to submit it to Episodes for publication
- To submit a new proposal of Albian GSSP to the Cretaceous Subcommittee Voting Members, then to submit it to ICS, and possibly to Episodes for publication
- To bring recommendations for the remaining GSSPs to ICS as soon as possible
- To propose the definition of criteria for identifying the base of the Berriasian and the J/K boundary.
- To communicate the results as widely as possible.
- To develop new directions for the Subcommittee as GSSP proposals are completed. Specifically, future objectives will concern the subdivision of stages, with definition of substages and related GSSPs.

## Work Plan

2011 – Finalize the proposal for the base of the Albian

2011 - Finalize proposals for the base of Valanginian, Hauterivian, Barremian, Aptian, Coniacian, and possibly Campanian

2011-2012 - Finalize the proposal for the base of Berriasian (Jurassic/Cretaceous boundary)

2010 to 2014 – Definition of substages.

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## APPENDIX [*Names and Full Addresses of Current Officers and Voting Members*]

### *Subcommittee officers (with addresses)*

**Chair:** Prof. I. Premoli Silva

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**Vice Chair:** Dr. I. Walaszczyk

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### ***Kilian Group [formerly Lower Cretaceous ammonite WG]:***

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