Ma

Standard Chronostratigraphy

Geomagnetic Polarity

Calcareous Nannofossils: Tethyan, Boreal

Reference Ammonite Zonations and Horizons

Tethyan

Boreal ammonoids: Sub-Boreal; Russian Platform; High Boreal (Siberia); NW European zones; NW European subzones

Greenland horizons

Arctic Palynozonations

Arctic Canada: Johnson & Hills 1973 zones; Johnson & Hills 1973 subzones; Pocock 1976

East Greenland: Davies 1983; Lund & P. 1985; Smelror 1988b

Svalbard - Barents Sea: Bjærke 1977; Bjærke 1980b; Smelror & Below 1992

Russian Platform: Riding *et al.* 1999

Siberia: Ilyina *et al.* 2005; Nikitenko *et al.* 2013 Dinocysts; Nikitenko *et al.* 2013 Mio-spores

Jurassic Arctic Palynomorph Events (this paper)

Ma	Standard Chronostratigraphy	Geomagnetic Polarity	Calcareous Nannofossils: Tethyan	Calcareous Nannofossils: Boreal	Tethyan	Sub-Boreal	Russian Platform	High Boreal (Siberia)	NW European zones	NW European subzones	Greenland horizons
143.5		M19	NJT17a	NJ18	*Berriasella jacobi*	*Subcraspedites lamplughi*	*Craspedites nodiger*	*Craspedites taimyrensis*	*Subcraspedites lamplughi*		*Subcraspedites* aff. *preplicomphalus*
						Subcraspedites preplicomphalus			*Subcraspedites preplicomphalus*		
							Craspedites subditus	*Craspedites okensis*	*Subcraspedites primitivus*		*Subcraspedites* sp.
144					*Protacanth. andraeai*	*Subcraspedites primitivus*			*Praechetaites tenuicostatus*		*Praechetaites tenuicostatus*
						Paracraspedites oppressus	*Kachpurites fulgens*		*Epilaugeites vogulicus*		*Epilaugeites vogulicus*
						Titanites anguiformis		*Praechetaites exoticus*			
		M20	NJT16			*Galbanites kerberus*	*Epivirgatites nikitini*	*Epivirgatites variabilis*	*Laugeites groenlandicus*		*Laugeites lambecki*
144.5					*Micracanthoceras microcanthum*	*Galbanites okusensis*		*Taimyrosphinctes excentricus*	*Crendonites anguinus*		*Laugeites groenlandicus*
						Glaucolithites glaucolithus			*Epipallasiceras pseudapertum*		*Crendonites anguinus*
						Progalbanites albani	*Virgatites virgatus*	*Dorsoplanites maximus*			*Pavlovia* aff. *subgorei*
145					*Micracanthoceras ponti / Burckhardticeras peroni*						*Dorsoplanites intermissus*
						Virgatopavlovia fittoni	*Dorsoplanites panderi*	*Dorsoplanites ilovaiskyi*	*Dorsoplanites gracilis*		*Pavlovia groenlandica*
145.5									*Dorsoplanites liostracus*		*Epipallasiceras pseudapertum*
											Epipallasiceras acutifurcatum
											Epipallasiceras rotundiforme
											Dorsoplanites gracilis delta
											Dorsoplanites antiquus
											Dorsoplanites liostracus
											Dorsoplanites gracilis beta
				NJ17b		*Pavlovia rotunda*			*Pavlovia variocostata*		*Pavlovia variocostata*
146					*Semiformiceras fallauxi*			*Pavlovia iatriensis*	*Pavlovia communis*		*Pavlovia communis*
		M21	NJT15						*Pavlovia rugosa*		*Pavlovia rugosa*
						Pavlovia pallasioides			*Pavlovia iatriensis*		*Pavlovia iatriensis*
146.5									*Dorsoplanites primus*		*Dorsoplanites primus*
											Paravirgatites sp. B
						Pectinatites pectinatus	*Ilowaiskya pseudoscythica*	*Pectinatites pectinatus*	*Pectinatites pectinatus*	*P. paravirgatus*	*Paravirgatites* sp. A
147										*P. eastlecottensis*	*Pectinatites eastlecottensis*
					Semiformiceras semiforme						*Pectinatites groenlandicus*
				NJ17a		*Pectinatites hudlestoni*		*Sphinctoceras subcrassum*	*Pectinatites hudlestoni*		*Pectinatites* cf. *abbrevatus*
147.5					*Semiformiceras darwini*		*Ilowaiskya sokolovi*				
		M22				*Pectinatites wheatleyensis*			*Pectinatites wheatleyensis*		*Sphinctoceras* spp.
148											
						Pectinatites scitulus			*Pectinatites elegans*		*Pectinatites elegans*
148.5					*Hybonoticeras hybonotum*						
				NJ16b		*Pectinatites elegans*	*Ilowaiskya klimovi*	*Eosphinctoceras magnum*			
149											
		M22A		NJ16a		*Aulacostephanus autissiodorensis*	*Aulacostephanus autissiodorensis*		*Aulacostephanus autissiodorensis*		*Aulacostephanus* cf. *kirghizensis*
149.5											
					Hybonoticeras beckeri						*Amoeboceras elegans*
150		M23				*Aulacostephanus eudoxus*	*Aulacostephanus eudoxus*		*Aulacostephanus eudoxus*		*Hoplocardioceras decipiens*
150.5											*Amoeboceras kochi*
					Aulacostephanus eudoxus						
151											*Zonovia borealis*
		M24	NJT14		*Aspidoceras acanthicum*	*Aulacostephanus mutabilis*	*Aulocostephanus sosvaensis*		*Aulacostephanus mutabilis*		
151.5											
					Crussoliceras divisum						
152		M24A									*Rasenia* aff. *evoluta*
						Rasenia cymodoce	*Amoeboceras kitchini*		*Rasenia cymodoce*		*Rasenia cymodoce*
152.5		M24B			*Ataxioceras hypselocyclum*						? *Pachypictonia* sp.
153		M25		NJ15b	*Sutneria platynota*						*Rasenia inconstans*
											Pictonia cf. *normandiana*
153.5		M25A			*Idoceras planula*	*Pictonia baylei*			*Pictonia baylei*	*A. (Plasmatites) bauhini*	
154							*Amoeboceras bauhini*				*Amoeb. Plasmatites bauhini*
154.5		M26			*Epipeltoceras bimammatum*						
		M27									
155		M27r									
					Aspidoceras hypselum	*Ringsteadia pseudocordata*	*Amoeboceras rosenkranzi*		*Amoeb. rosenkrantzi*	*A. (Prionod.) marstonense*	*Amoeb. (Prionod.) marstonense*
155.5		M28									
156											
156.5											
		M29			*Perisphinctes bifurcatus*		*Amoeboceras regulare*		*Amoeb. regulare*	*A. (Amoeb.) regulare*	*Amoeb. (Amoeb.) regulare*
157						*Perisphinctes cautisnigrae*				*A. (Prion.) serratum*	
		M30					*Amoeboceras serratum*		*Amoeb. serratum*	*A. (Amoeb.) koldeweyense*	*Amoeb. (Prion.) serratum*
157.5										*A. (Prionod.) glosense*	*Amoeb. (Amoeb.) koldeweyense*
		M31			*Gregoryceras transversarium*		*Amoeboceras glosense*		*Amoeb. glosense*	*A. (Amoeb.) ilovaiskii*	*Amoeb. (Prionod.) glosense*
158						*Perisphinctes pumilus*	*Cardioceras tenuiserratum*				*Amoeb. (Amoeb.) ilovaiskii [D. lintonensis]*
									Card. tenuiserratum	*C. (Cawtoniceras) blakei*	*Card. (Mitic.) tenuiserratum*
158.5		M32	NJT13		*Perisphinctes plicatilis*	*Perisphinctes plicatilis*	*Cardioceras densiplicatum*		*Card. densiplicatum*	*C. (Mitic.) tenuiserratum*	*Cardiioceras* cf. *densiplicatum*
										C. (Malton.) maltonense	
159										*C. (Verteb.) vertebrale*	
		M33			*Cardioceras cordatum*	*Cardioceras cordatum*	*Cardioceras cordatum*		*Cardioceras cordatum*	*Cardioceras cordatum*	*Cardioceras* cf. *cordatum*
159.5										*Cardioceras costicardia*	
										Cardioceras bukowskii	
160					*Quenstedtoceras mariae*	*Quenstedtoceras mariae*	*Quenstedtoceras mariae*		*Cardioceras mariae*	*Cardioceras praecordatum*	*Cardioceras alphacordatum*
		M34		NJ14							
160.5											
										Cardioceras scarburgense	*Quenstedtoceras woodhamense*
161		M35									
		M36									

Ma	Arctic Canada: Johnson & Hills 1973 zones	Arctic Canada: Johnson & Hills 1973 subzones	Arctic Canada: Pocock 1976	East Greenland: Davies 1983	East Greenland: Lund & P. 1985	East Greenland: Smelror 1988b	Svalbard - Barents Sea: Bjærke 1977	Svalbard - Barents Sea: Bjærke 1980b	Svalbard - Barents Sea: Smelror & Below 1992	Russian Platform: Riding *et al.* 1999	Siberia: Ilyina *et al.* 2005	Siberia: Nikitenko *et al.* 2013 Dinocysts	Siberia: Nikitenko *et al.* 2013 Mio-spores	Jurassic Arctic Palynomorph Events (this paper)
143.5										RPJ17 (part.)	Pb/Tr	JD18	JSP16	*Ctenidodinium*? *schizoblatum, Dichadogonyaulax culmula, Gochteodinia villosa*
144												JD17		*Cribroperidinium*? *longicorne, Lanterna bulgarica, Rhynchodiniopsis pennata*
												JD16	JSP15	*Leptodinium mamilliferum, Moesiodinium raileanui, Trichodinium erinaceoides*
144.5										RPJ16				*Prolixosphaeridium parvispinum*
														Oligosphaeridium patulum
145												JD15		*Prolixosphaeridiopsis spissa*
145.5											Op			*Atopodinium prostatum, Cribroperidinium jubaris, Glossodinium dimorphum, Pareodinia groenlandica*
														Cribroperidinium granulatum, Cribroperidinium nuciforme, Egmontodinium polyplacophorum, Imbatodinim kondratjevii, Leptodinium deflandrei, Leptodinium volgense, Scriniodinium anceps, Scriniodinium inritibile, Systematophora? *ovata*
146														
146.5										RPJ15				*Muderongia simplex*
147														*Gonyaulacysta dualis, Pareodinia asperata, Rhynchodiniopsis cladophora, Scriniodinium dictyotum* subsp. *dictyotum, Senoniasphaera jurassica, Tubotuberella dangeardii, Tubotuberella egemenii*
147.5														
148											Ad/C	JD14		
148.5														*Dingodinium cerviculum, Exochosphaeridium scitulum, Leptodinium deflandrei, Rhynchodiniopsis pennata, Stiphrosphaeridium anthophorum, Tanyosphaeridium isocalamum, Tubotuberella apatela*
149										RPJ14				*Pyxidinopsis laminata, Sentusidinium ringnesiorum*
														Lanterna bulgarica, Leptodinium volgense, Pareodinia asperata
149.5														*Corculodinium inaffectum*
150														
150.5														
151														*Cassiculosphaeridia magna, Cribroperidinium*? *perforans, Oligosphaeridium pulcherrimum*
151.5														*Cribroperidinium jubaris, Dingodinium jurassicum, Egmontodinium polyplacophorum, Epiplosphaera saturnalis, Gochteodinia mutabilis, Paragonyaulacysta capillosa, Protobatioladinium westburiense, Scriniodinium inritibile, Stephanelytron membranoideum*
152										RPJ13	Rc	JD13		
152.5														*Cribroperidinium*? *perforans* subsp. *kunzeviense, Endoscrinium subvallare, Lanterna*? *cantrellii, Lithodinia jurassica*
153														
153.5														*Apteodinium maculatum*
154														*Apteodinium granulatum, Cribroperidinium*? *ehrenbergii, Cribroperidinium*? *perforans* subsp. *perforans, Glossodinium dimorphum, Leptodinium*? *hyalodermopse, Lunatadinium dissolutum, Pareodinia groenlandica, Perisseiasphaeridium pannosum, Pyxidinopsis laminata, Scriniodinium anceps, Sentusidinium capillatum, Tubotuberella egemenii, Wallodinium krutzschii, Wrevittia helicoidea*
154.5														*Nannoceratopsis pellucida*
155														*Apteodinium bucculiatum, Arkellea teichophera, Egmontodinium*? *diminutum, Evansia deflandrei, Evansia evittii, Evansia*? *opeasatos, Evansia zabra, Komewuia glabra, Meiourogonyaulax deflandrei, Scriniodinium crystallinum, Sentusidinium verrucosum, Stephanelytron membranoideum*
155.5														
156										RPJ12		JD12	JSP14	
156.5														
157														
157.5											Ram	JD11		*Leptodinium subtile*
158														*Cribroperidinium globatum*
										RPJ11				*Gonyaulacysta longicornis, Rigaudella aemula*
158.5														*Gonyaulacysta dualis, Sentusidinium ringnesiorum*
159										RPJ10				*Trichodinium scarburghense*
														Gonyaulacysta desmos, Wanaea fimbriata
159.5												JD10	JSP13	*Gonyaulacysta jurassica*
160														
160.5										RPJ9	Wf	JD9		*Leptodinium mirabile*
													JSP12	*Tubotuberella dentata, Limbodinium absidatum, Wanaea thysanota*
161														*Ambonosphaera calloviana, Ctenidodinium continuum, Meiourogonyaulax planoseptata, Valensiella dictydia*
														Gonyaulacysta desmos, Wanaea fimbriata