

Contents

Introduction				
By Yu. A. Kravtsov				
Refe	erences	5		
Forecasting Weather and Climate				
By A. S. Monin and L. I. Piterbarg (With 3 Figures)		7		
2.1	Weather and Climate	7		
2.2	Dynamical Systems and Their Properties	9		
2.3	Weather Predictability	16		
2.4	Elements of Stationary Random Process			
	Prediction Theory	23		
2.5	Predictability of Climatic Processes	27		
2.6	Ways to Improve Statistical Forecasting	35		
2.7	Utilization of Forecasting Results	39		
2.8	Conclusion	42		
Refe	rences	42		
How an Active Autowave Medium				
Can Be Used to Predict the Future				
		45		
3.1	Prediction	45		
3.2	Active Autowave Media	46		
		1		
		49		
3.4		54		
3.5		59		
3.6		60		
3.7		63		
entropolitic mi sig		68		
Refe		73		
	By Refer Ford By A 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 Refer By A 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8	Forecasting Weather and Climate By A. S. Monin and L. I. Piterbarg (With 3 Figures) 2.1 Weather and Climate 2.2 Dynamical Systems and Their Properties 2.3 Weather Predictability 2.4 Elements of Stationary Random Process Prediction Theory 2.5 Predictability of Climatic Processes 2.6 Ways to Improve Statistical Forecasting 2.7 Utilization of Forecasting Results 2.8 Conclusion References How an Active Autowave Medium Can Be Used to Predict the Future By G. R. Ivanitskii (With 16 Figures) 3.1 Prediction 3.2 Active Autowave Media 3.3 Autowave Propagation in Energy-Restoring Active Media 3.4 Dynamics of Autowave Interaction 3.5 The External Medium Model and Its Fourier Image 3.6 Non-isochronism of Cyclic Processes		

4.	Synergetics, Predictability and Deterministic Chaos			
	By (G. G. Malinetskii (With 31 Figures)	75	
	4.1	Dynamical Chaos	75	
	4.2	Nonlinearity and Open Systems Behavior	78	
	4.3	Synergetics and Order Parameters	86	
	4.4	Strangeness of the Strange Attractors	96	
	4.5	Dynamical Chaos and Reality	114	
	4.6	Dynamical Chaos. Gates of Fairyland	125	
	Refe	erences	139	
5.	The	Information-Theoretic Approach to Assessing		
	Reliability of Forecasts			
	By V	V. A. Lisichkin	143	
	5.1	Assessing Forecasts	143	
	5.2	Forecasting as the Subject Matter of Information Theory.	143	
	5.3	An Example	146	
	5.4	Optimization of Forecasting Methods	148	
	5.5	Properties Shared by Prediction Methods	151	
	5.6	The Connection Between Discounting		
		and Non-stationarity	155	
	5.7	Conclusion	159	
	Refe	rences	160	
6.	Prec	liction of Time Series		
	By N	M. A. Sadovskii and V. F. Pisarenko	161	
	6.1	The Problem	161	
	6.2	Genesis of Random Phenomena	162	
	6.3	Time Series Prediction Based		
		on Dynamical Chaos Theory	164	
	6.4	Prediction of Point Processes	165	
	6.5	The Nature of Errors Hindering Prediction	166	
	6.6	Prediction of Strong Earthquakes	169	
	Refe	rences	171	
7.	Fun	damental and Practical Limits of Predictability		
	By Yu. A. Kravtsov (With 10 Figures)			
		Predictability	173	
	7.2	Real, Observed, and Model Processes	173	

		Contents	IX
	7.3	Degree of Predictability. The Predictability Horizon	176
	7.4	Searching for Prediction Models	
	7.5	Limits to Predictability	194
		Dynamical Analogs to Social and Economic Phenomena.	200
		Conclusion	202
	Refe	rences	203
8.	The	Future is Foreseeable but not Predictable:	
	The	'Oedipus Effect' in Social Forecasting	
	By I.	V. Bestuzhev-Lada	205
	8.1	Historical Background	205
	8.2	The 'Oedipus Effect' in Social Forecasting	208
	8.3	The Problem of Foresight and Prediction in Globalistics.	212
	8.4	The Problem of Foreseeing and Predicting	
		the Development of the Former Soviet Society	216
	Refe	rences	220
	Appe	endix A: Looking Back on the August 1991 Coup	220
	Appe	endix B: Looking Ahead	221
9.	The	Self-Organization of American Society in Presidential	
	and Senatorial Elections		
	By V	I. Keilis-Borok and A. J. Lichtman (With 1 Figure)	223
	9.1	Historical Background	223
	9.2	The American Presidential Election: Formal Analysis	225
	9.3	Midterm Senatorial Elections: Formal Analysis	229
	9.4	Discussion	234
	Refe	rences	237
10.	Pro	blems of Predictability in Ethnogenic Studies	
	By I	N. Gumilev and V. Yu. Yermolaev (With 1 Figure)	239
	Refe	rences	250
Sul	Subject Index		