Role of laser date in the mission “Geo-IK-2”

Parkhomenko N.[1], Gukov F.[1], Titov E.[1], Martynov S.[1]
(1) Research-and-Production Corporation «Precision Systems and Instruments» parknataliya@yandex.ru

Goals and tasks of the mission “Geo-IK-2”

Mission goals:

- Determination of the Earth’s gravitational field parameters;
- Establishment of a highly accurate geodetic network in the geocentric reference frame;
- Determination of flow of continental plates;
- Determination of earth tides;
- Determination of changes in the Earth’s rotation velocity and pole coordinates.

Mission tasks:

- Establishment of regional geodetic networks;
- Earth remote sensing;
- Marine geoid determination;
- Ice situation monitoring.

Role of the SLR technique in the mission: precision orbit determination (POD)

SLR data collection and processing center (QOSDCPC)

QOSDCPC tasks:

- Collection and processing of the data on the SC equipped with LRR received from various SLR station of the ILRS network;
- Calculation of predictions in Consolidated Prediction Format (CPF);
- NP generation based on the SLR measurement data;
- Data output in Consolidated Laser Ranging Data Format (CRD).

QOSDCPC features:

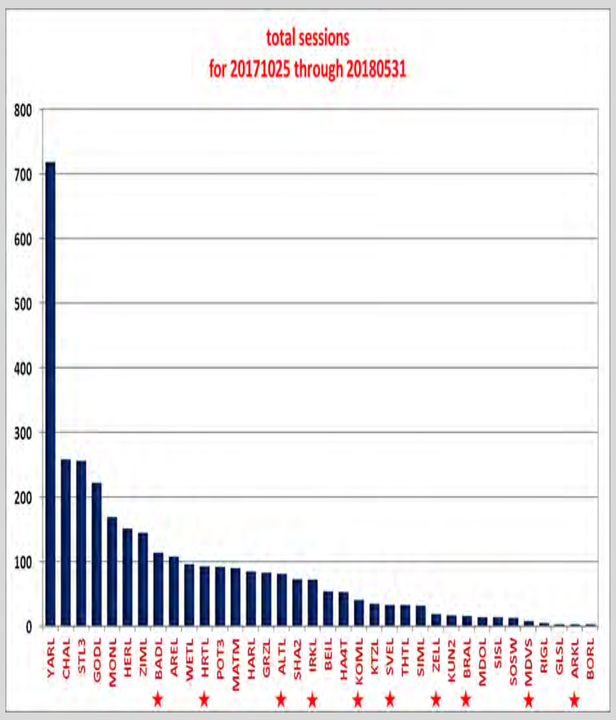
- Processing rate – quasireal-time (no greater than 5 minutes excluding delivery of measurements);
- Orbit determination accuracy – at the level of 10 cm (RMS error);
- Methodical evaluation error – less than 1 mm.

Provider’s code in Crustal Dynamics Data Information System (CDDIS) – SPN

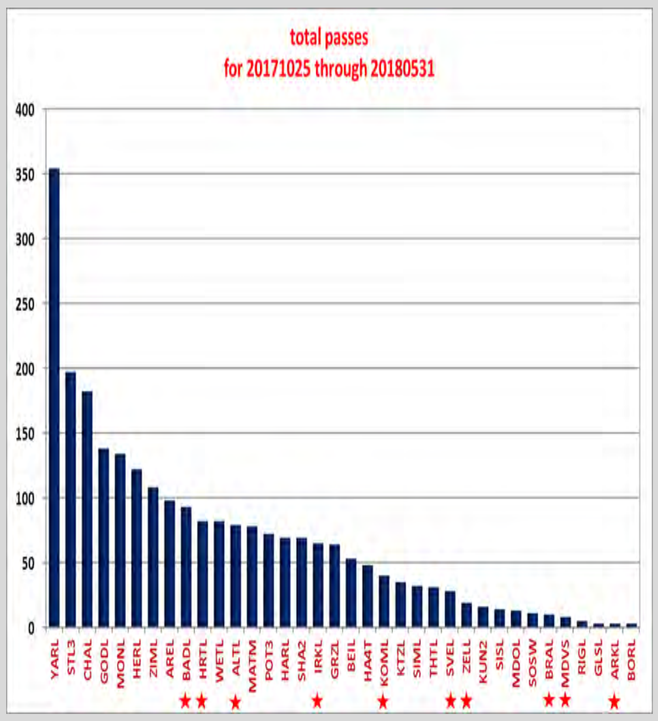
ILRS data stats

Key parameters of laser ranging sessions

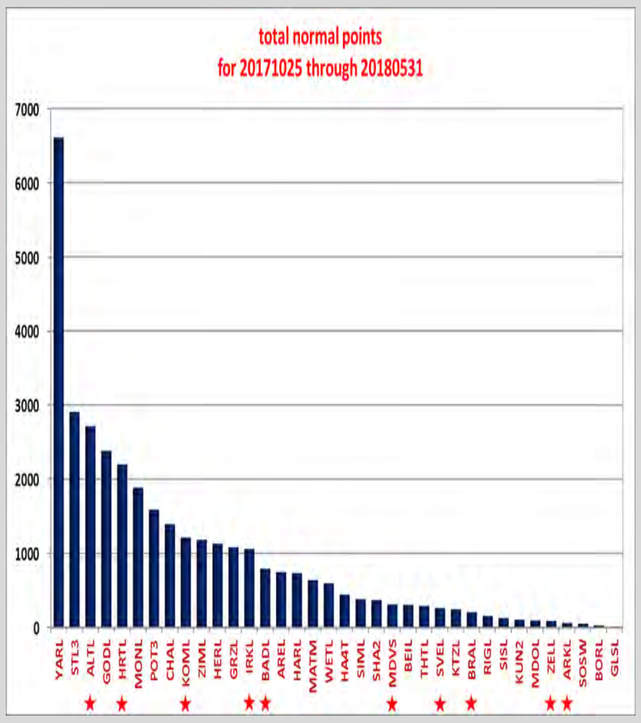
Sessions



Passes



Normal Points (NP’s)



Location Name	Code	Station	No. Sessions	No. Passes	No. Points
Altay	ALTL	1879	81	79	2716
Arequipa	AREL	7403	108	98	747
Arkhyz	ARKL	1886	3	3	61
Badary	BADL	1890	114	93	792
Beijing	BEIL	7249	54	53	306
Borowiec	BORL	7811	3	3	28
Brasilia	BRAL	7407	16	10	207
Changchun	CHAL	7237	258	182	1396
Golosiiv	GLSL	1824	3	3	10
Graz	GRZL	7839	83	64	1083
Greenbelt	GODL	7105	222	138	2384
Haleakala	HA4T	7119	53	48	444
Hartebeesthoek	HARL	7501	85	69	734
Hartebeesthoek	HRTL	7503	93	82	2200
Herstmonceux	HERL	7840	151	122	1131
Irkutsk	IRKL	1891	72	65	1059
Katzively	KTZL	1893	35	35	247
Komsomolsk	KOML	1868	41	40	1213
Kunming	KUN2	7819	17	16	107
Matera	MATM	7941	90	78	639
McDonald Observato-ry	MDOL	7080	14	13	94
Mendeleevo	MDVS	1874	8	8	312
Monument Peak	MONL	7110	169	134	1889
Mount Stromlo	STL3	7825	256	197	2908
Potsdam	POT3	7841	92	72	1591
Riga	RIGL	1884	5	5	157
Shanghai	SHA2	7821	73	69	371
Simeiz	SIML	1873	32	32	382
Simosato	SISL	7838	14	14	128
Svetloe	SVEL	1888	33	28	264
Tahiti	THTL	7124	33	31	291
Wettzell	SOSW	7827	13	11	51
Wettzell	WETL	8834	96	82	597
Yarragadee	YARL	7090	718	354	6609
Zelenchukskaya	ZELL	1889	19	19	90
Zimmerwald	ZIML	7810	145	108	1184
Σ	36		3302	2458	34422

Joint-stock company «RESEARCH-AND-PRODUCTION CORPORATION «PRECISION SYSTEMS AND INSTRUMENTS» (JC «RPC «PSI»)

111024, Moscow, 53 Aviamotornaya st.

tel. (495) 234-98-47, fax (495) 234-98-59, www.npk-spp.ru