РОССИЙСКАЯ АКАДЕМИЯ НАУК
СИБИРСКОЕ ОТДЕЛЕНИЕ
ИНСТИТУТ ГЕОГРАФИИ ИМ. В.Б. СОЧАВЫ

РЕСУРСЫ, ОКРУЖАЮЩАЯ СРЕДА И РЕГИОНАЛЬНОЕ УСТОЙЧИВОЕ РАЗВИТИЕ В СЕВЕРО-ВОСТОЧНОЙ АЗИИ

Тезисы докладов V Международной научной конференции
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Ресурсы, окружающая среда и региональное устойчивое развитие в Северо-Восточной Азии : Тезисы докладов V Международной научной конференции (Иркутск, 23–26 августа 2022 г.). – Иркутск: Изд-во Института географии им. В.Б. Сочавы СО РАН, 2022. – 197 с.

В сборнике опубликованы тезисы докладов V Международной научной конференции «Ресурсы, окружающая среда и региональное устойчивое развитие в Северо-Восточной Азии», посвященной анализу фундаментальных научных проблем в области оптимального экологоориентированного ресурсообеспечения жизнедеятельности и качества жизни населения, устойчивого развития современных природных, промышленных, сельскохозяйственных и урбанизированных ландшафтов и сохранения природной среды трансграничных территорий Северо-Восточной Азии. Конечной целью конференции является нахождение точек соприкосновения и выдвижения конструктивных предложений по решению проблем ресурсопользования, сохранения окружающей среды и социально-экономического развития приграничных регионов, исследования антропогенного влияния, модернизации экономики регионов, транспортной и социальной инфраструктуры, а также установление новых научных связей и укрепление существующего международного сотрудничества.

Сборник ориентирован на широкий круг исследователей, ученых, преподавателей, студентов, практиков, интересующихся проблемами оценки природно-ресурсного потенциала и эффективного природопользования, анализом состояния современных ландшафтов и их компонентов, территориального планирования и регионального развития, социально-демографическими и культурно-географическими проблемами, а также применением информационных технологий в географических исследованиях.

MONITORING OBSERVATION FOR SPECIAL NATURE PROTECTED AREAS USING GEOINFORMATION MOBILE APPLICATIONS

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Scientific long-term monitoring for revealing of geosystem dynamics, biodiversity changes under nature and anthropogenic influence is one of the main tasks of special protected nature areas (SPNAs). Unification of the information and its collection in typical conditions, stable constant long-term description of geosystem component features, environment and species areal peculiarities are the necessary criteria for obtaining of reliable data. Tradition nonautomotive collection of field data decelerates and complicates this work. Moreover, key reference plots at the SPNAs of the Lake Baikal area are remote enough and inaccessible that makes more difficulties for current regular and quickly data collecting and processing. GIS support makes easier solving of the nature phenomena monitoring tasks. One of the modern popular geoinformation technologies are mobile applications for data collection such as QField. After collecting all data can be loaded and processed using GIS software, for example ArcGIS, QGIS, etc. The user downloads the application on his smartphone and then enters the required information and attributes, makes data synchronization and visualization according the certain scientific monitoring tasks. The applications also have some navigation functions, determine the location geographical coordinates that makes them more cross-functional and convenient for using.

This work has approbation for the territory of the FSE "Zapovednoe Podlemorie. It includes the Zabaikalskii National Park, Barguzinskii Reserve and Frolikhinskii zakaznik. The application QField is set up for the scientific, touristic and protection departments. At the first stage, we worked out the universal project with a satellite high-resolution image, vector topographic, forestry base, SPNA borders, and main touristic and scientific monitoring routs. At the second stage specified vector layers for entering objects and their attributes were created according every scientific task. It is rare flora species, animals (mammals and birds), nature and anthropogenic geosystem disturbance, geosystem components characteristics, touristic and scientific infrastructure, etc. All characteristics are structurized as attribute database and entered using special menus, lists, numeral rulers or symbol fields. For example, the layer "Rare flora species" has the next fields of characteristic – "number of monitoring plot", "name of specie", "number of plant exemplars", "number of blooming exemplars", "date of the observation', "square of the areal", 'notes" and others. The third stage includes entering objects, collecting and filling out attribute data through the application during the field research and monitoring at the rout. Additionally, the user can determine in the application the exact geolocation, object coordinates, edit the item location and attributes, attach the images of the observed objects and then send all this information as a vector file for saving and processing using some GIS software. The gap of the QField application is absence of automatized synchronization with an aggregate GIS-server where the organization keeps all information.

Thus, digitalization of data collecting for the scientific monitoring using geoinformation mobile applications solves different tasks of information processing. In particular, user collects all data straight in digital method and there is no needs to digitize them additionally after fieldwork. All data can be edited right in the application. The object attribute structure in every layer is universal for all scientific or other fellows of the "Zapovednoe Podlemorie" that reduces subjective approach to data collecting and evaluation during the monitoring. It also unifies base layers and content of a future geoinformation database and simplifies the following information processing. Researchers can lessen the number of field equipment for collecting data during the monitoring observation due to convenient visualization of the basic map, smartphone geolocation, navigation and other functions.